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# SAN Configuration Guide

## IBM Storage

IBM TotalStorage PROVEN™

QLOGIC PRESS

# QLogic SAN Configuration Guide for IBM Storage

## Version 4.0

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# Introduction

The *QLogic SAN Configuration Guide for IBM Storage* is a comprehensive resource for developers and consultants interested in deploying QLogic solutions.

## How to Use This Guide

This guide provides detailed solution configurations and interoperability information, which allow you to deploy a QLogic-powered SAN. Updated versions of this guide can be downloaded from the QLogic website at: http://www.qlogic.com/interopguide.

End-to-end interoperability not only includes switches, host bus adapters (HBAs), and storage products; it also extends to the component level. Therefore, this guide includes detailed information outlining the exact configurations tested by QLogic and the procedures necessary to deploy a SAN.

## For More Information

Over 50 million QLogic products have shipped inside servers, workstations, RAID subsystems, tape libraries, disk and tape drives. Powering solutions from the industry's leading storage network providers, the broad line of QLogic controller chips, HBAs, storage network switches and management software move data from storage devices through the network fabric to servers.

Additional QLogic resources can be found at the following locations:

### Fibre Channel Host Bus Adapters

http://www.qlogic.com/products/fc_san_hostadapers.asp

### Fibre Channel Switches

http://www.qlogic.com/products/fc_san_switchs.asp

### QLogic Technical Support

http://www.qlogic.com/support/

### Interoperability Guides from QLogic Press

http://www.qlogic.com/interopguide/

# Statement of Support

The QLogic SAN Pro™ Service and Support Program allows customers to choose from a variety of service plans designed to meet specific business requirements. SAN Pro covers a diverse range of services, including remote technical assistance, on-site support and advanced hardware replacement. Best of all, no matter which plan is selected, customer satisfaction is guaranteed by QLogic and its network of authorized service partners.

QLogic switch products allow a wide range of organizations to exploit the power of a SAN. Whether it's a fast growing small firm implementing a network with 10-20 devices, or a Fortune 100 Corporation creating a large infrastructure with thousands of devices, the QLogic SAN Pro Service and Support Program effectively addresses your needs.

The SAN Pro Service and Support Program offers a diverse range of services including SAN Pro Prime, SAN Pro Select, and SAN Pro Exchange. Customers may choose among the services that best meet the demands of their business. Most importantly, customers are assured complete satisfaction since QLogic and its qualified partners fully guarantee all products and services.

For additional information on support, please visit QLogic at:
http://support.qlogic.com/support/warranty_expertlink.asp.

For warranty information, please visit QLogic at
http://support.qlogic.com/support/warranty.asp.

# Test Philosophy

The QLogic SAN configuration test philosophy is broken down into two test levels:

- Application-level interoperability
- Device-level interoperability

## Application-Level Interoperability Test

The application-level interoperability test ensures that applications such as backup/restore, LAN-free back-up, serverless backup, and server clustering will run as designed on a combinations of hardware components that are representative of customer configurations. At this level, the hardware configurations are, for the most part, complex and can involve numerous devices that differ by type, vendor and operating system. Since the objective of this test is to determine the feasibility of typical customer SAN solutions, not every function of the application can be tested. While the application-level interoperability test addresses the major functions of the application, successful completion of the test does not guarantee full interoperability. However, it does provide a reasonably high level of confidence that the application will function well in most SAN solution scenarios.

## Device-Level Interoperability

The device-level and system integration test verifies functionality of the device with additional hardware and software. The interoperability and system integration test ensures conformance with the ANSI Fibre Channel (FC) standards and interoperability between servers and storage.

### Server Interoperability

This ensures there are no problems between the HBA and the server. Potential problems, which may be found in this testing, include incompatibility between the HBA and server PCI chipsets, and conflicts between the HBA driver/BIOS setting and drivers/BIOS setting of other installed devices/adapters in the server.

### Storage Interoperability

Storage devices such as disk arrays and tape devices are tested with SAN hardware and HBAs. This ensures compatibility between the end device and SAN hardware. Potential problems that may be found include improper LIP handling, AL_PA and Worldwide Name problems, jitter, and so on.

### Application Device-Level Interoperability

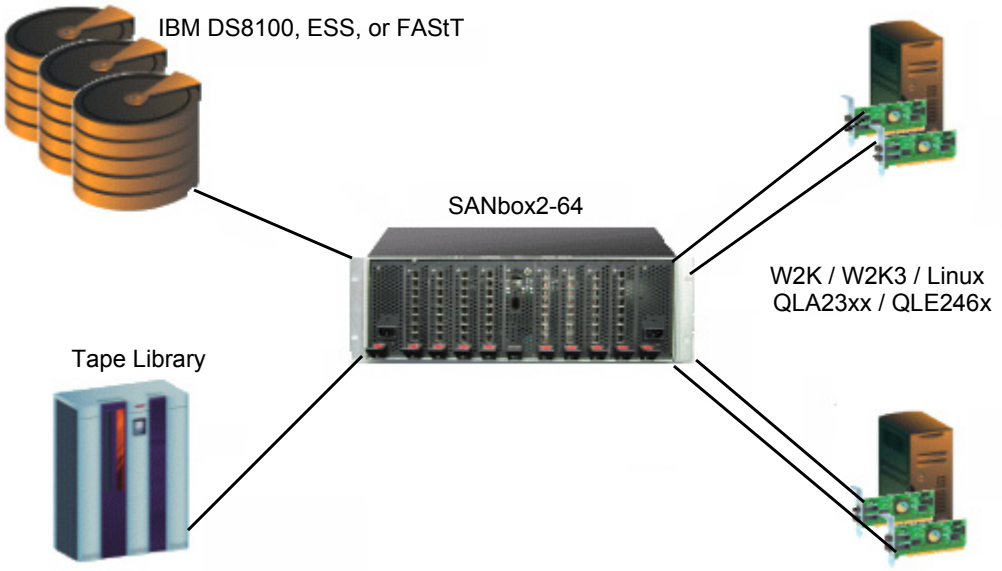
The application device-level interoperability test ensures coexistence with the operating system environment and typical user shrink-wrapped software. It also ensures that the software works with the applicable hardware. In the case of a Windows environment, the component should have successfully completed all applicable Microsoft Hardware Certification program tests.

# Tested SAN Configurations

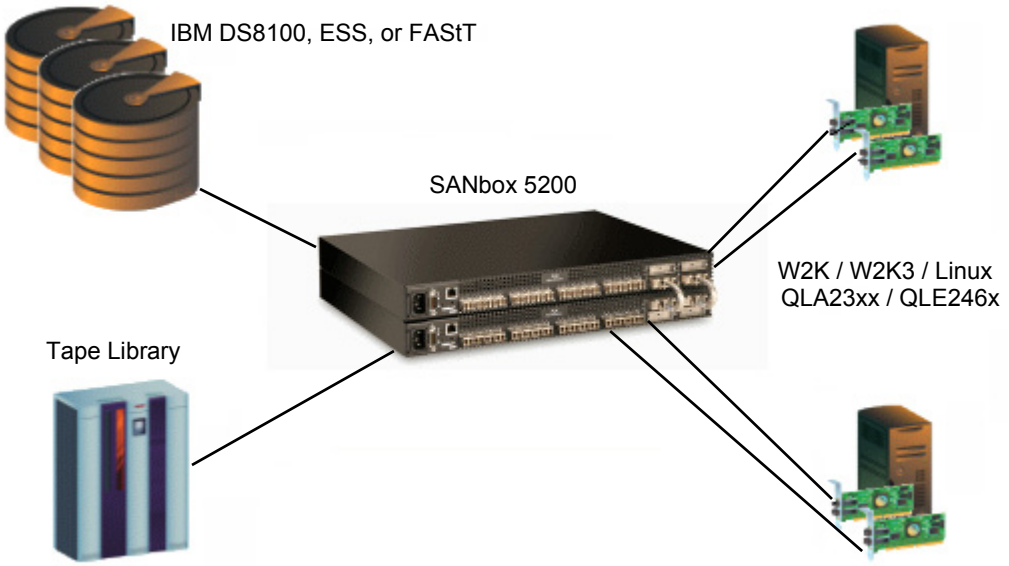
The following SAN illustrations show several different configurations and components certified by QLogic. Your configuration details may differ.

**NOTE:** For information on multi-vendor switch configuration, please see the *Switch Interoperability Guide* at http://www.qlogic.com/interopguide.

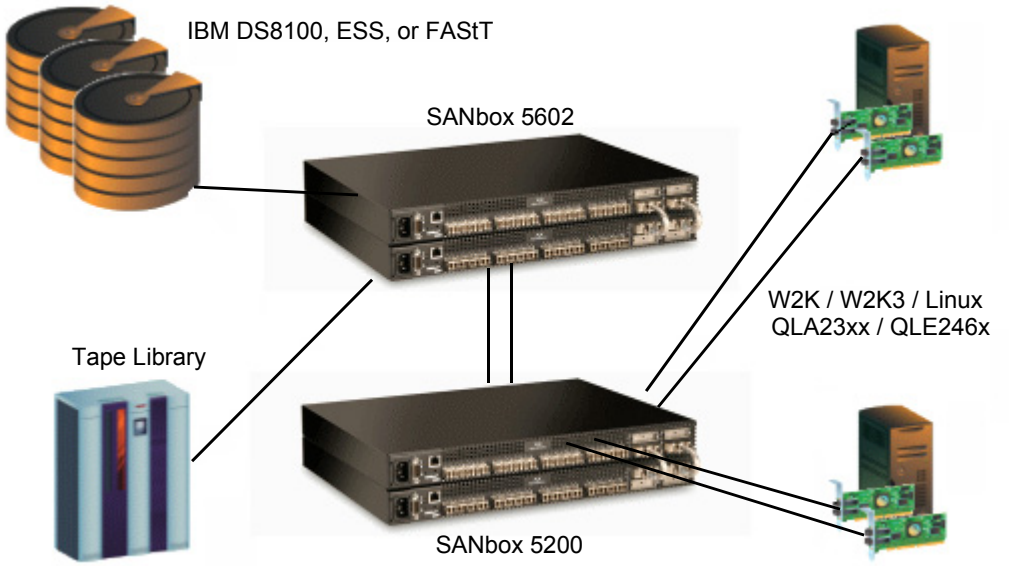
## Single-Switch Configuration: SANbox2-64



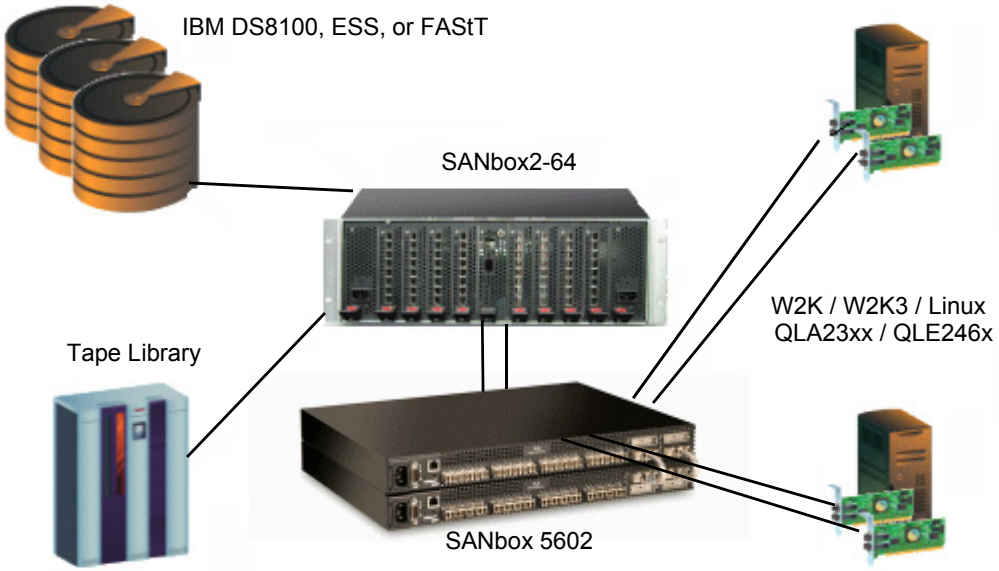
## Cascade Configuration: SANbox 5200



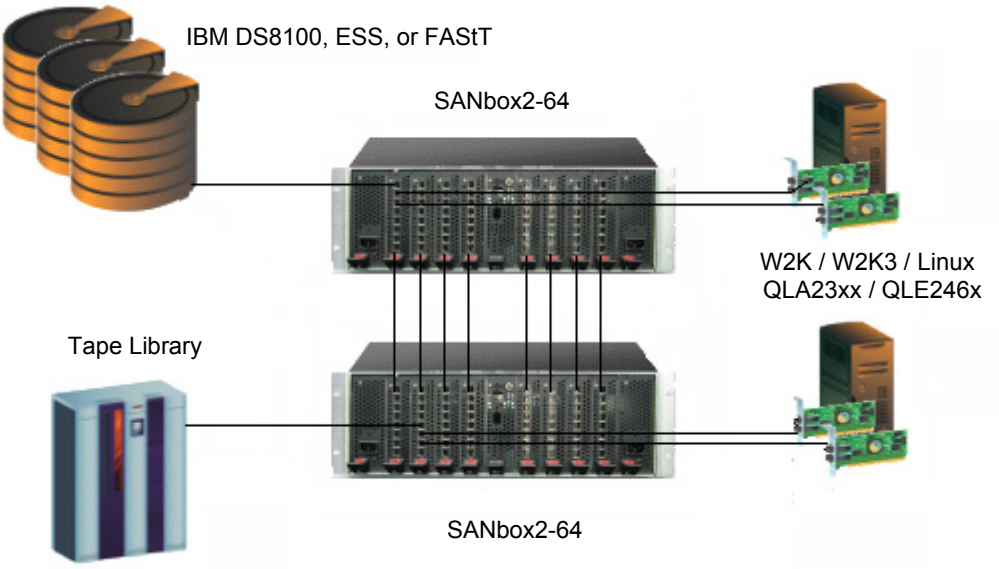

## Cascade Configuration: SANbox 5602 and SANbox 5200



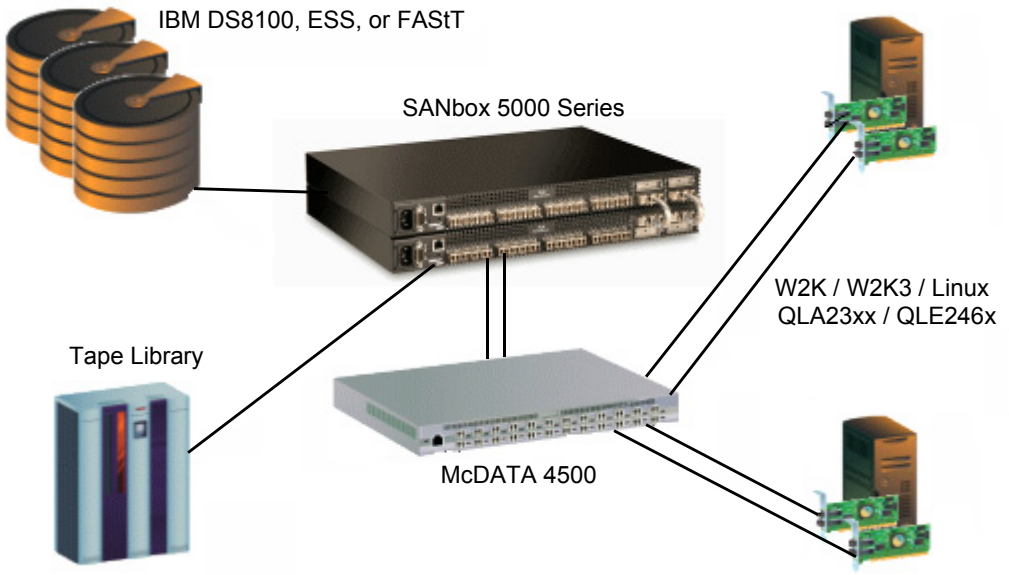
## Cascade Configuration: SANbox2-64 and SANbox5602



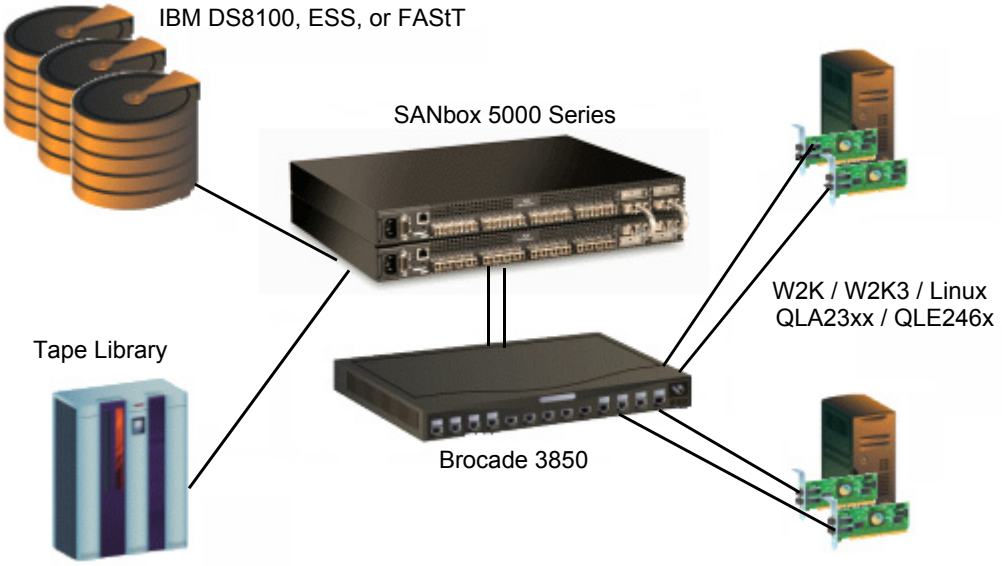

## Cascade Configuration: SANbox2-64 with SANbox2-64



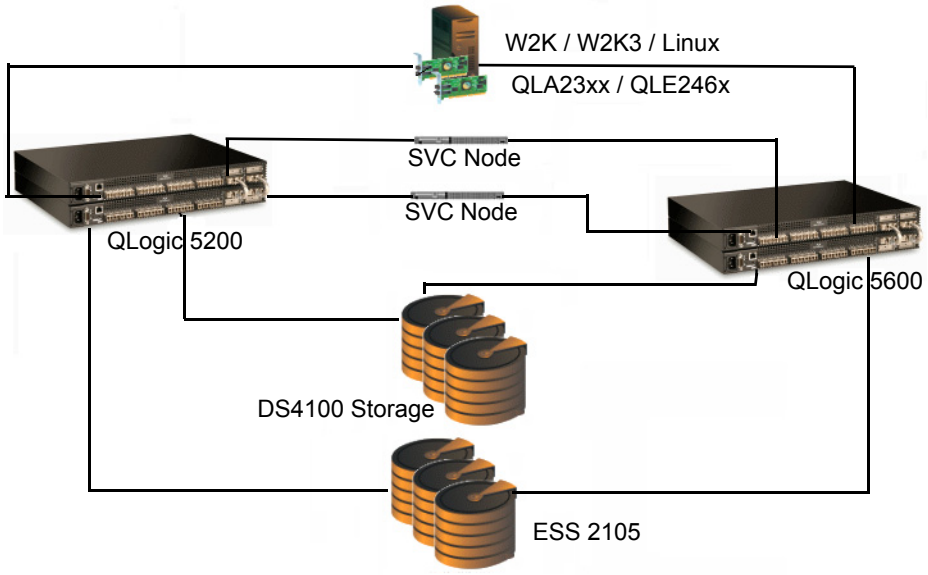
## Cascade Configuration: SANbox 5000 Series and McDATA 4500




## Cascade Configuration: SANbox 5000 Series and Brocade 3850



## SVC Configuration



# Driver and Firmware Levels

The following driver and firmware levels were used during QLogic certification testing. As new levels of software are released, they will be supported. See the QLogic website for the latest drivers, software, and manuals: http://www.qlogic.com/support/drivers_software.asp.

## QLogic SANblade HBAs

| Model | Windows 2003 Driver | Windows 2000 Driver | BIOS | Linux Red Hat Driver |
|---|---|---|---|---|
| QLA2310 | 8.2.3.11 or above | 8.2.3.11 or above | 1.29 or above | 6.06.10 |
| QLA2340 | 8.2.3.11 or above | 8.2.3.11 or above | 1.29 or above | 6.06.10 |
| QLA2342 | 8.2.3.11 or above | 8.2.3.11 or above | 1.29 or above | 6.06.10 |
| QLE2460 | 9.1.0.16 (w32) or above | 9.1.0.11 or above | 1.29 or above | 7.07.01 |
| QLE2462 | 9.1.0.16 (w32) or above | 9.1.0.11 or above | 1.29 or above | 7.07.01 |

***NOTE:*** To download the latest IBM-approved HBA drivers, please see the QLogic website at: http://www.qlogic.com/support/oem_detail_all.asp?oemid=22.

## Switches

| Manufacturer | Model | Firmware |
|---|---|---|
| QLogic | SANbox 5602 | 5.0.0.17 or above |
| QLogic | SANbox 5600 | 5.0.0.27 or above |
| QLogic | SANbox 5200 | 5.0.0.17 or above |
| QLogic | SANbox Express 1400 | 5.0.0.17 or above |
| QLogic | SANbox2-64 | 5.0.0.17 or above |
| McDATA | Sphereon 4500 | 6.02 or above |
| McDATA | Sphereon 4300 | 6.02 or above |
| McDATA | Intrepid | 6.02 or above |
| Brocade | Silkworm 24000 | 4.4.0e |
| Brocade | Silkworm 12000 | 4.4.0e |
| Brocade | Silkworm 3900 | 4.1.2f |
| Brocade | Silkworm 3850 | 4.1.2f |
| Brocade | Silkworm 3250 | 4.1.2f |

## IBM Storage

| Model | Firmware |
|---|---|
| DS8100 Model 2107 | 5.0.3.0277 |
| DS6800 Model 1750 | 5.0.3.0264c |
| DS4100 Model 1724 | 5.42.03.00 |
| ESS 2105-800 (Shark) | 2.4.0.245 |
| FAStT 200 | 05.30 |
| FAStT 900 | 06.12 |

## Application Software / Appliances

| Application | Vendor | Version |
|---|---|---|
| SANsurfer™ Management Suite CD | QLogic | 5.00.05 or above |
| SANbox® Manager | QLogic | 5.00.05 or above |
| SANblade™ Manager | QLogic | 5.00.05 or above |
| DS8000 Storage Manager | IBM | 5.0.3.0277 or above |
| SVC (SAN Virtualization Controller) Model 2145 | IBM | 2.1.0.2 or above |
| FAStT Storage Manager | IBM | 07.10.G5.14 or above |

## Operating Systems

| Operating System | Version | Service Pack/Kernel |
|---|---|---|
| Microsoft Windows | 2000 Server | SP4 or above |
| Microsoft Windows | 2003 Server | SP1 or above |
| Red Hat Linux | Advanced Server 3.0 | 2.4.21-27 |

## Libraries and Tape Drives

| Manufacturer * | Model | Microcode |
|---|---|---|
| IBM | ULT3582-TL Library | 227B or above |
| IBM | ULT3580-TD1 Tape Drive | 38D0 or above |
| IBM | LTO 3 | 54K1 or above |
| STK | L 180 Tape Library | 3.09.00 or above |

* These libraries and tape drives were tested during QLogic certification but procedures are not available. Please check with your tape or library vendor representative for more information.

# SAN Setup and Configuration

The following section of the *QLogic SAN Configuration Guide for IBM Storage* provides instructions to set up and configure your servers, storage, and storage network. Once you have completed these steps, additional procedures illustrate how to connect the host and storage ports to the networks, and how to validate your storage network connections.

In most cases, the SAN setup and configuration proceeds in this order:

1. Server Configuration
2. Storage Configuration
3. Storage Network Configuration

# Server Configuration

This section walks you through the steps needed to ready your server for connection to the storage network, including information on:

- Installing the HBA and switch device management application (SANsurfer Management Suite)
- Installing and configuring HBA drivers
- Configuring the HBA with appropriate settings

To complete the server configuration, refer to the appropriate section:

- Configuring the Server on Windows
- Configuring the Server on Red Hat

## Fibre Channel HBAs Overview

The award-winning QLogic SANblade 2300 Series Fibre Channel HBAs offer 2Gbps performance for demanding SANs and are available in PCI-X form factor, which is backwards compatible to PCI. QLogic SANblade HBAs are the industry's highest-performing and most widely deployed host adapter solutions for server, networking, storage and clustering solutions.

The SANblade 2300 Series architecture is the result of more than 15 years of progressive development and testing. The QLogic proven architecture delivers higher overall reliability and enables advanced functionality with its single chip integration, placing QLogic years ahead of its competitors. The SANblade 2300 also has proven interoperability with all major software applications, hardware platforms and operating systems.

The SANblade QLE2460 and QLE2462 Fibre Channel HBAs offer enterprise-class 4Gbps performance in a PCI-E form factor with dual- (2462) and single-port (2460) options.

The QLogic SANblade HBAs tested with the IBM storage systems are:

- QLA234x
- QLA2310
- QLE2460
- QLE2462

## Assumptions

The following procedures assume that:

- You have installed the HBA device into the system according to specifications in the hardware installation guide provided with the HBA. For more information, see the SANblade user manual at: http://www.qlogic.com/support/home_resources.asp?id=76.
- Your operating system and appropriate patches have been installed to meet the software and driver requirements for all components. For more information, see “Driver and Firmware Levels” on page 19.

# Configuring the Server on Windows

The following sections describe the server configuration steps for Windows:

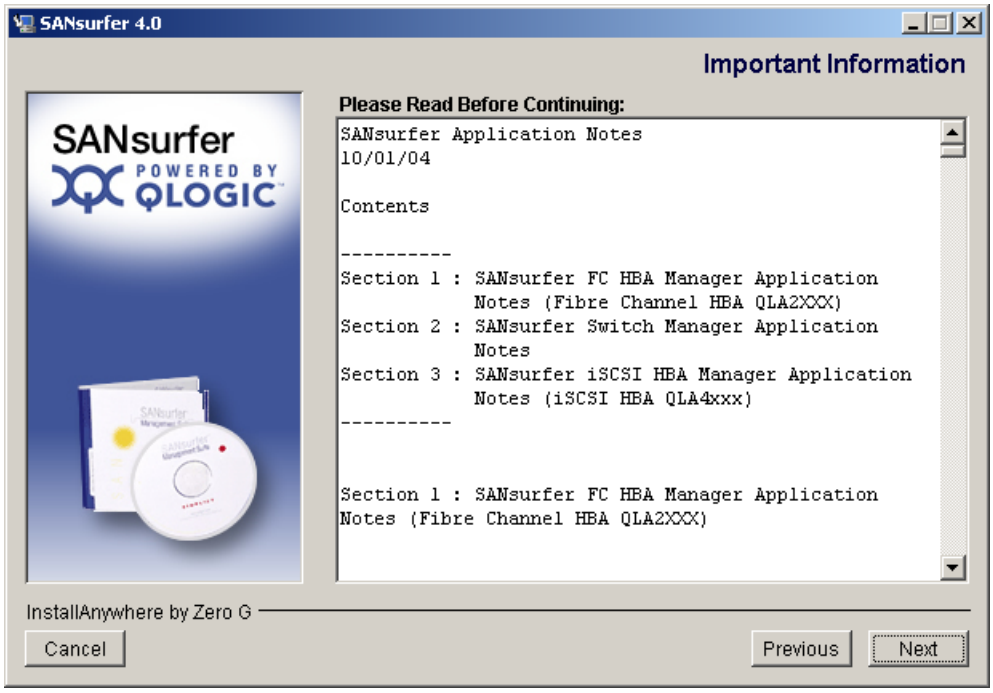
- Installing SANsurfer Management Suite
- Installing the Windows Driver
- Configuring the HBA on Windows

## Installing SANsurfer Management Suite

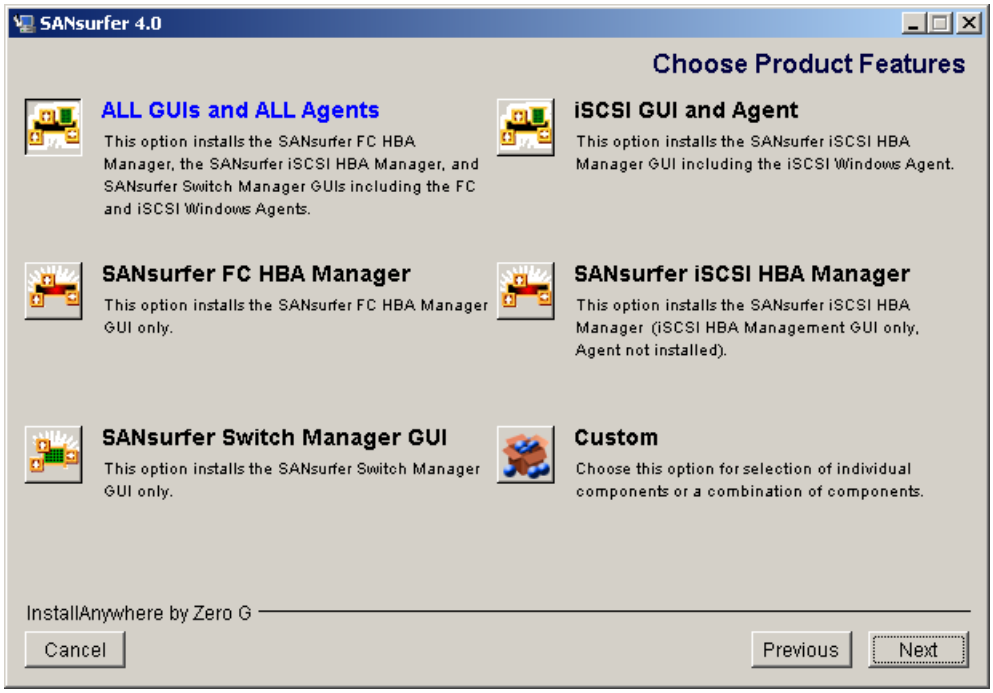
To install the SANsurfer Management Suite, follow these steps:

*NOTE:* You can use this version of the SANsurfer Management Suite only for HBA configuration. A different version of the SANsurfer Switch Manager is required to configure your QLogic Fibre Channel switches. (Refer to “Installing the SANsurfer Switch Manager” on page 72.)

1. Download the latest version from the Download section of the QLogic website (http://www.qlogic.com/support/drivers_software.asp) and double click the icon to start the installation.
2. When the Introduction dialog displays, click **Next**.
3. Read the **Application Notes** carefully and click **Next** when you’re ready:

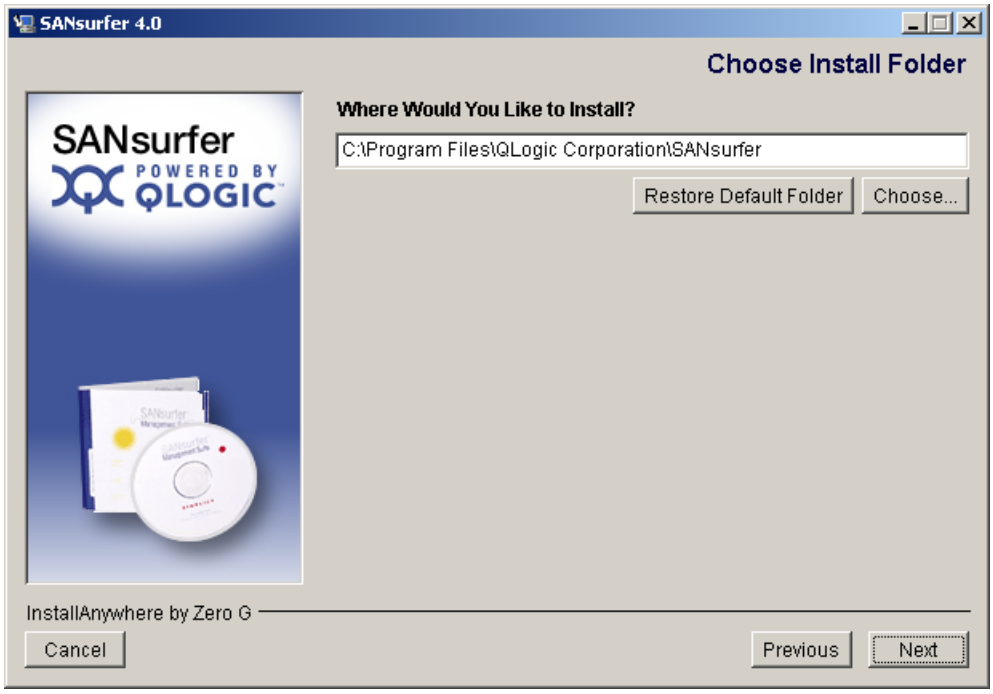

SANsurfer 4.0
Important Information
SANsurfer
POWERED BY QLOGIC
Please Read Before Continuing:
SANsurfer Application Notes
10/01/04
Contents
Section 1 : SANsurfer FC HBA Manager Application Notes (Fibre Channel HBA QLA2XXX)
Section 2 : SANsurfer Switch Manager Application Notes
Section 3 : SANsurfer iSCSI HBA Manager Application Notes (iSCSI HBA QLA4xxx)
Section 1 : SANsurfer FC HBA Manager Application Notes (Fibre Channel HBA QLA2XXX)
InstallAnywhere by Zero G
Cancel
Previous
Next

4. Select **ALL GUIs and ALL Agents** and click **Next**.

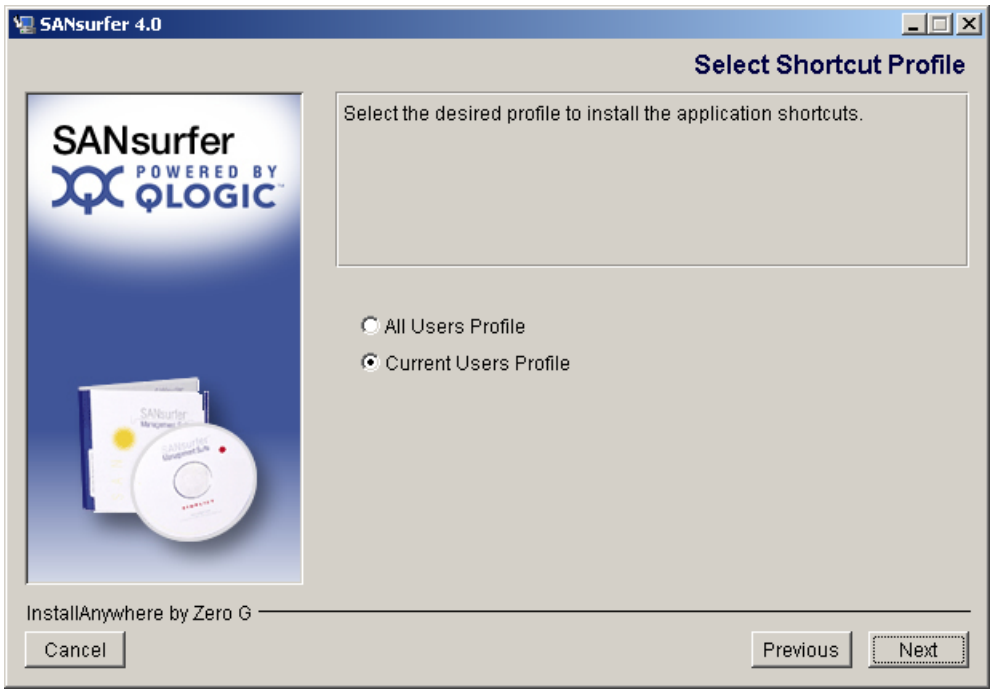

SANsurfer 4.0
Choose Product Features
ALL GUIs and ALL Agents
This option installs the SANsurfer FC HBA Manager, the SANsurfer iSCSI HBA Manager, and SANsurfer Switch Manager GUIs including the FC and iSCSI Windows Agents.
iSCSI GUI and Agent
This option installs the SANsurfer iSCSI HBA Manager GUI including the iSCSI Windows Agent.
SANsurfer FC HBA Manager
This option installs the SANsurfer FC HBA Manager GUI only.
SANsurfer iSCSI HBA Manager
This option installs the SANsurfer iSCSI HBA Manager (iSCSI HBA Management GUI only, Agent not installed).
SANsurfer Switch Manager GUI
This option installs the SANsurfer Switch Manager GUI only.
Custom
Choose this option for selection of individual components or a combination of components.
InstallAnywhere by Zero G
Cancel
Previous
Next

5. Edit the path where you want to install the software or click **Choose** and browse to the location. Click **Next**:

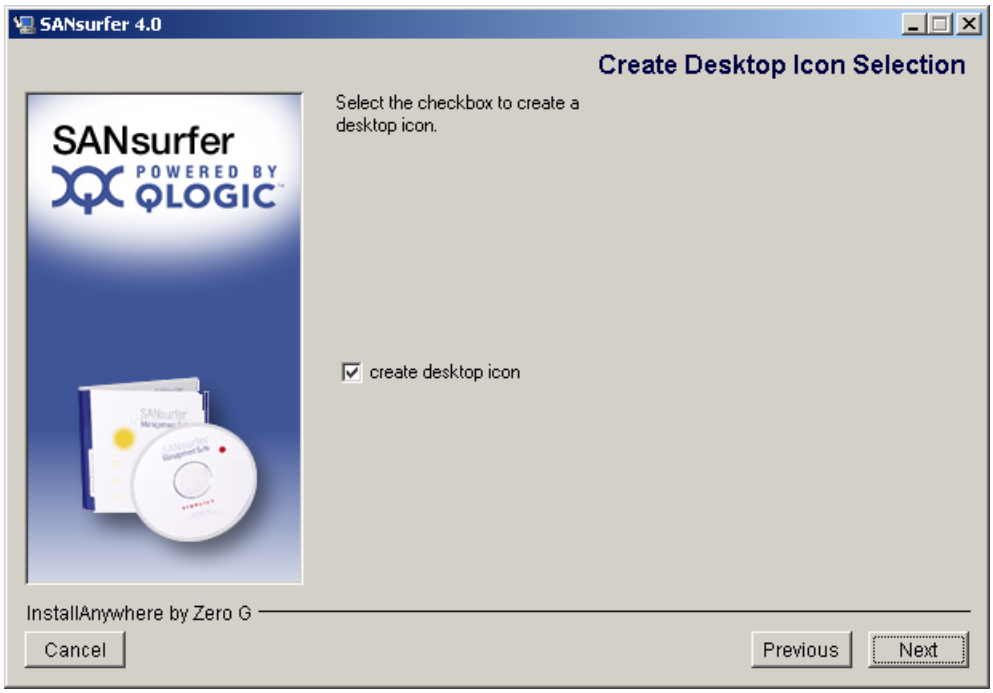
b



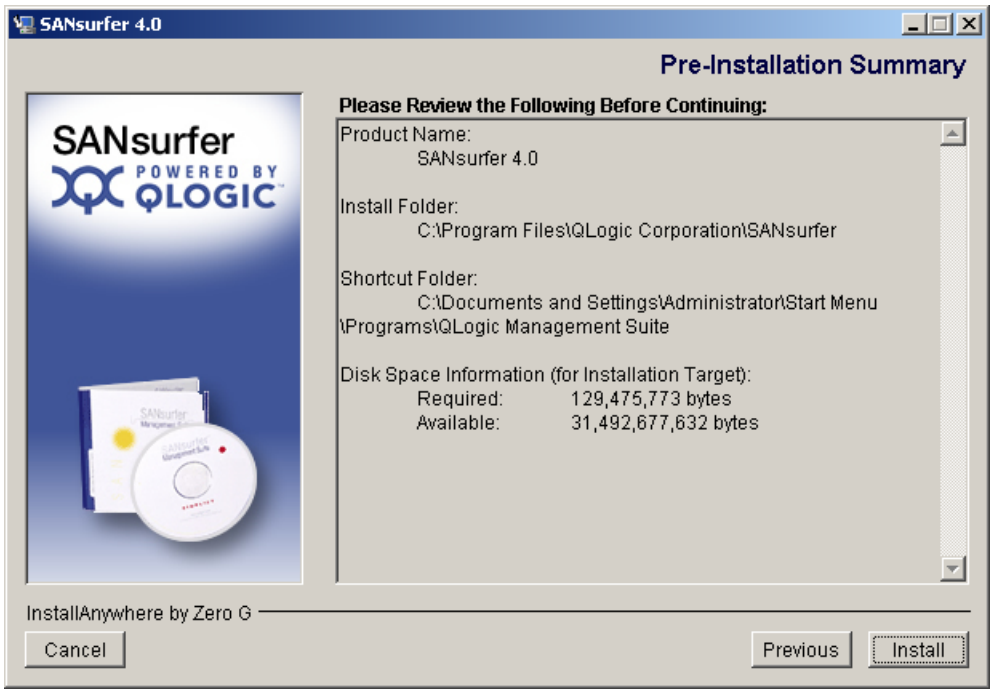
6. Select the **Shortcut Profile** you wish to use and click **Next**:



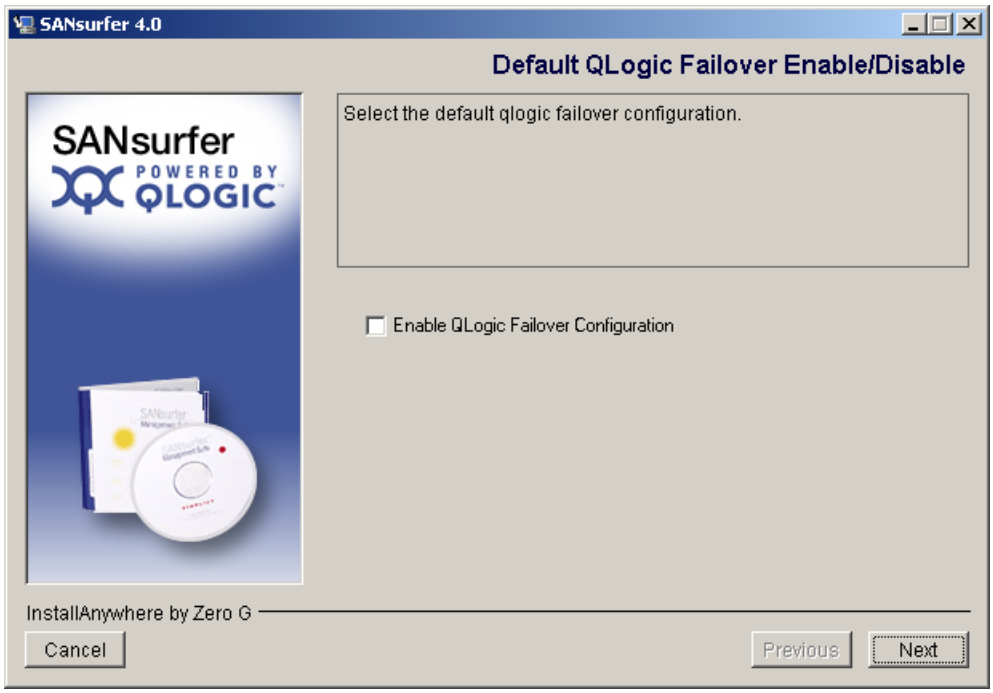
7. On Windows only, check **create desktop icon** if you wish, and click **Next**:



8. Review the Pre-Installation Summary and click **Install** when you're ready:



9. When the Default QLogic Failover Enable/Disable dialog box displays, click **Next**.




***NOTE:*** This feature may be enabled through SANsurfer Management Suite at a later date.

10. Click **Done** when the installation process completes.

### Installing the Windows Driver

The QLA23*xx* HBAs are plug-and-play devices automatically detected by Windows.

1. Download the latest driver from the **Download** section of the QLogic website (http://www.qlogic.com/support/drivers_software.asp) and extract them.
2. Windows detects the newly installed device, then displays the Found New Hardware Wizard message. Click **Next** to begin the driver installation.

3. When prompted, select **Search for a suitable driver for my device (recommended)** and click **Next**.

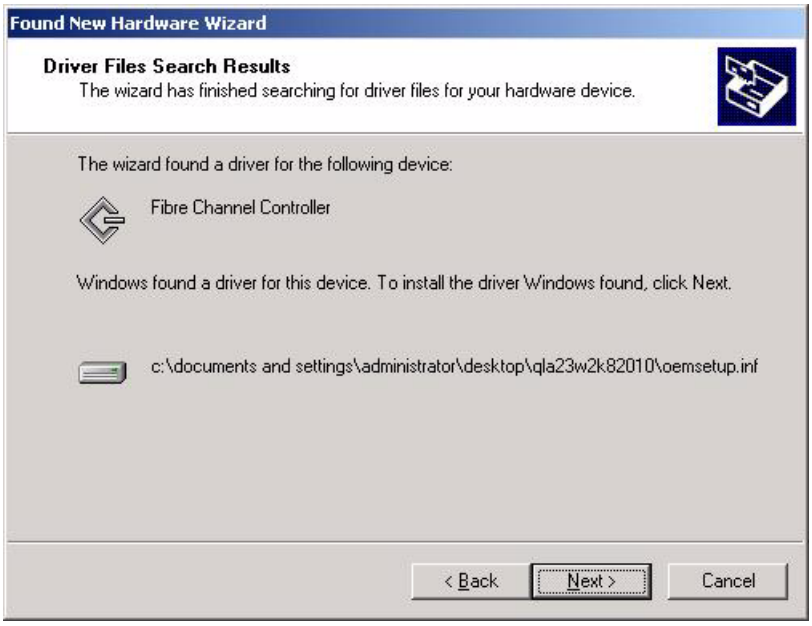
Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Fibre Channel Controller
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

4. Check **Specify a location** and click **Next:**

Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Fibre Channel Controller
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

5. Browse to the directory containing the driver and click **OK**:

6. When the **Driver Files Search Results** display, click **Next**:


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Fibre Channel Controller
Windows found a driver for this device. To install the driver Windows found, click Next.
c:\documents and settings\administrator\desktop\qla23w2k82010\oemsetup.inf
< Back
Next >
Cancel

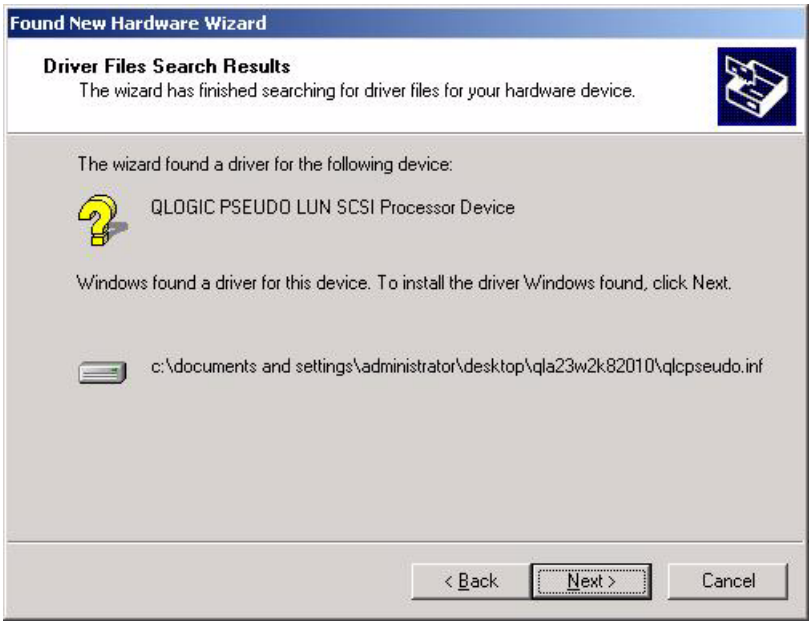
7. Click **Finish** to complete the installation.

## Windows 2000 HBA Pseudo LUN Driver

For Windows 2000 only, you must also install the pseudo LUN driver. Windows 2000 detects the newly installed device automatically.

1. Click **Next** to begin the driver installation from the Found New Hardware Wizard message.
2. When prompted, select **Search for a suitable driver for my device (recommended)** and click **Next**.
3. Check **Specify a location** and click **Next.**
4. Browse to the directory containing the driver and click **OK**.

5. When the **Driver Files Search Results** display, click **Next**:

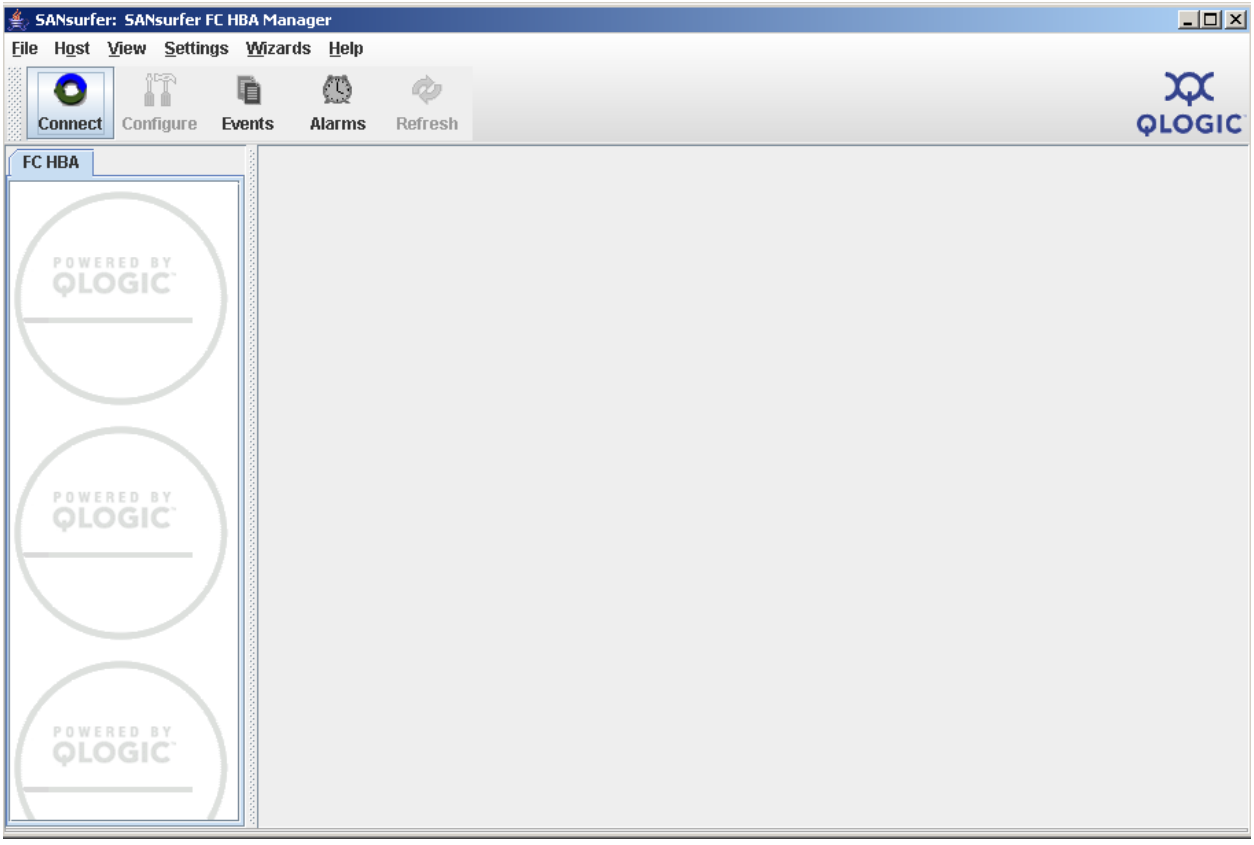

Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
QLOGIC PSEUDO LUN SCSI Processor Device
Windows found a driver for this device. To install the driver Windows found, click Next.
c:\documents and settings\administrator\desktop\qla23w2k82010\qlcpseudo.inf
< Back
Next >
Cancel

6. Click **Finish** to complete the installation.

## Configuring the HBA on Windows

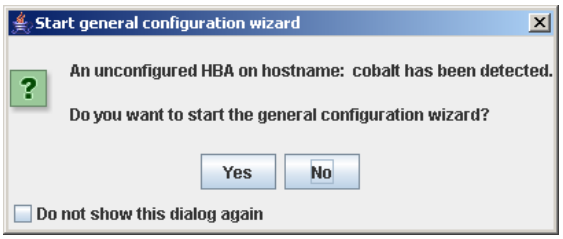
To configure the QLogic HBA on Windows, follow these steps:

1. Launch SANsurfer.
2. From the SANsurfer FC HBA Manager, click **Connect** on the toolbar:

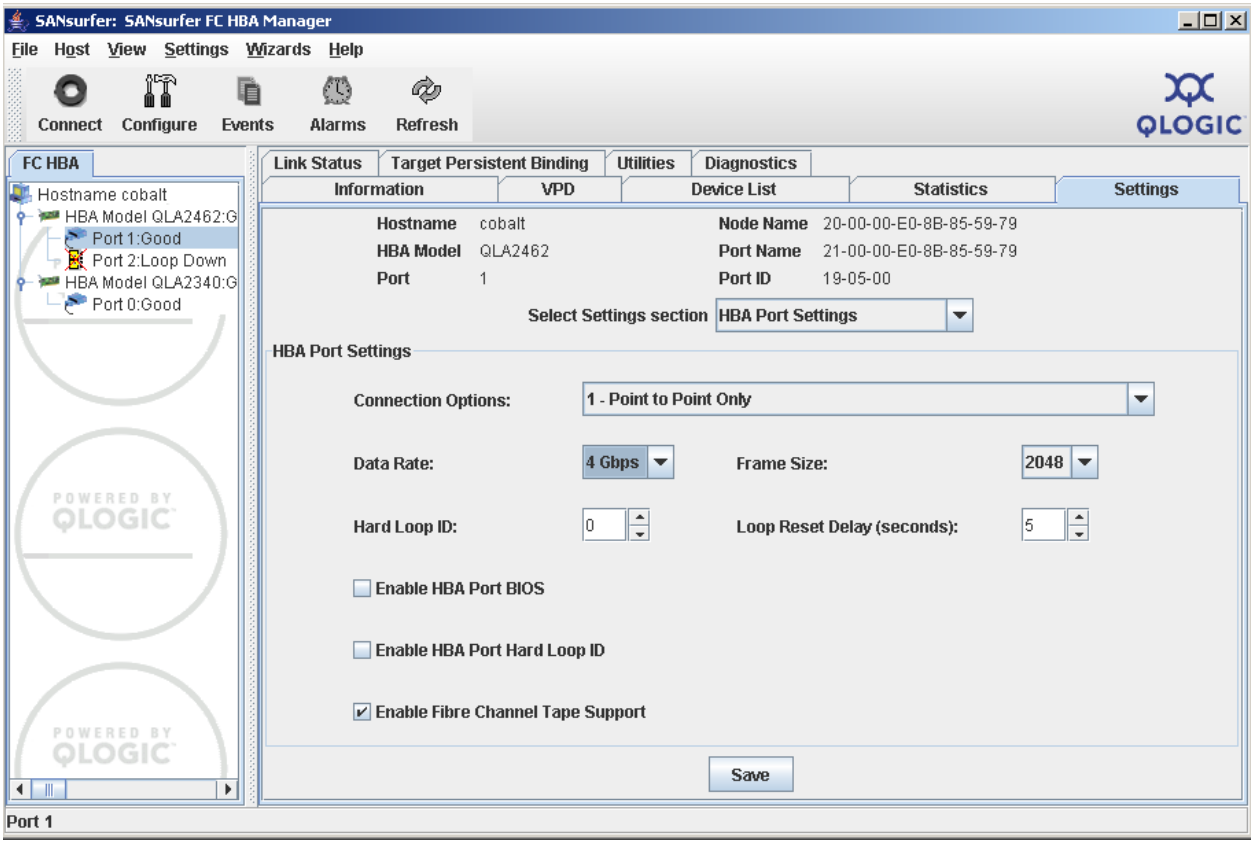


3. From the **Connect to Host** dialog, select the host from the list and click **Connect**:

4. When prompted to start the configuration wizard, click **No**:


Start general configuration wizard
An unconfigured HBA on hostname: cobalt has been detected.
Do you want to start the general configuration wizard?
Yes
No
Do not show this dialog again

5. In the FC HBA list on the left, select the adapter to configure and click the **Settings** tab.
6. Choose the following settings to configure the adapter:
   a. Select the connection type from the **Connections Options** list.
   b. Select the connection speed from the **Data Rate** list.
   c. Check **Enable Fibre Channel Tape Support**.

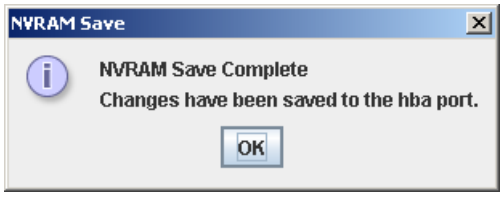



7. Click **Save**.

8. Enter the **Password** in the Security Check dialog box:

*NOTE:* The default password is "config". Contact your System Administrator if the password was changed.

9. Click **OK** to close the NVRAM Save confirmation message:



# Configuring the Server on Red Hat

The following sections describe how to configure the server on Red Hat:

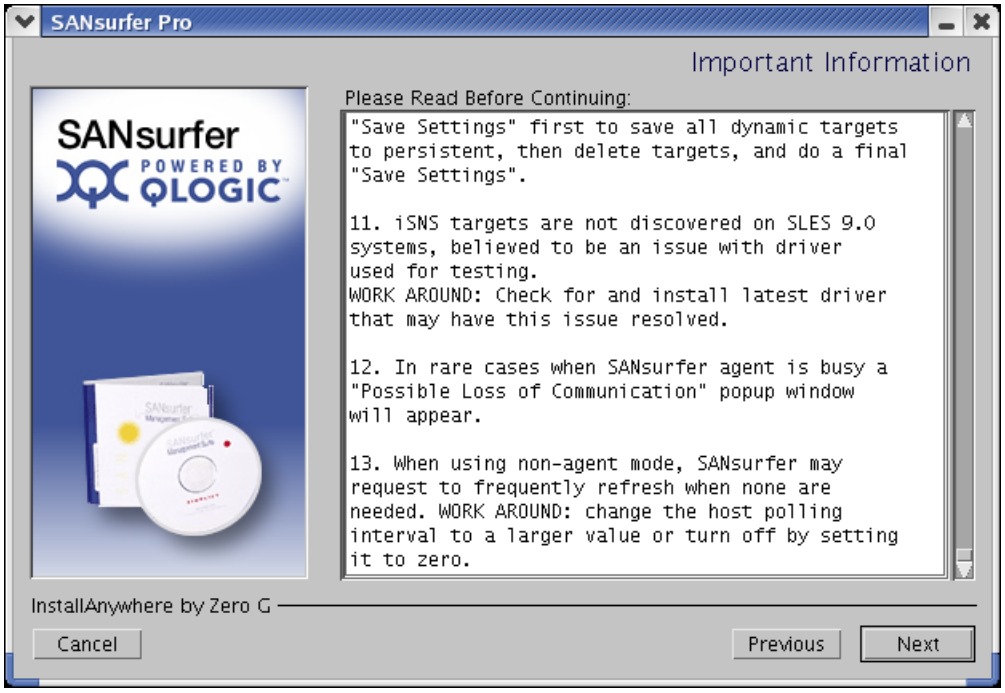
- Installing SANsurfer Pro
- Installing the Red Hat Driver
- Configuring the HBA

## Installing SANsurfer Pro

To install the SANsurfer Pro, follow these steps:

*NOTE:* You can use this version of the SANsurfer Pro only for HBA configuration. A different version of the SANsurfer Switch Manager may be required to configure your QLogic Fibre Channel switches. (Refer to “Installing the SANsurfer Switch Manager” on page 72.)

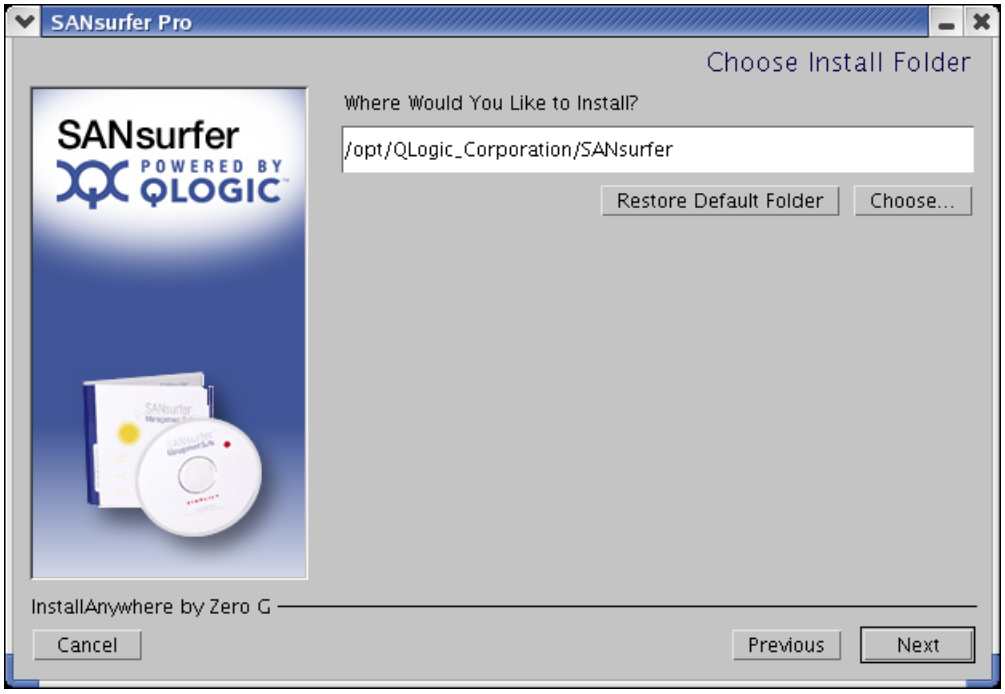
1. Download the latest version from the Download section of the QLogic website (http://www.qlogic.com/support/drivers_software.asp) and double click the icon to start the installation.
2. When the Introduction dialog displays, click **Next**.
3. Read the **Important Information** carefully and click **Next** when you’re ready:


SANsurfer Pro
Important Information
SANsurfer
POWERED BY QLOGIC
Please Read Before Continuing:
"Save Settings" first to save all dynamic targets to persistent, then delete targets, and do a final "Save Settings".
11. iSNS targets are not discovered on SLES 9.0 systems, believed to be an issue with driver used for testing.
WORK AROUND: Check for and install latest driver that may have this issue resolved.
12. In rare cases when SANsurfer agent is busy a "Possible Loss of Communication" popup window will appear.
13. When using non-agent mode, SANsurfer may request to frequently refresh when none are needed. WORK AROUND: change the host polling interval to a larger value or turn off by setting it to zero.
InstallAnywhere by Zero G
Cancel
Previous
Next

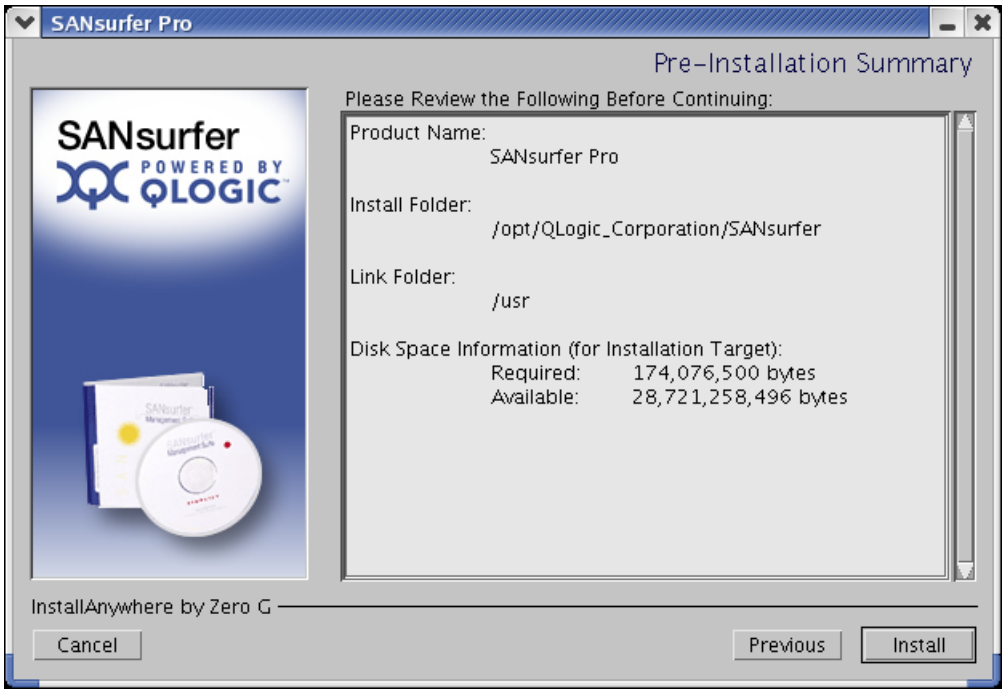
4. Select **ALL GUIs and ALL Agents** and click **Next**.

SANsurfer Pro
Choose Product Features
ALL GUIs and ALL Agents
This option installs the SANsurfer FC HBA Manager, the SANsurfer iSCSI HBA Manager, and SANsurfer Switch Manager GUIs including the FC and iSCSI Linux Agents.
iSCSI GUI and Agent
This option installs the SANsurfer iSCSI HBA Manager GUI including the iSCSI Linux Agent.
SANsurfer FC HBA Manager
This option installs the SANsurfer FC HBA Manager GUI only.
SANsurfer iSCSI HBA Manager
This option installs the SANsurfer iSCSI HBA Manager (iSCSI HBA Management GUI only, Agent not installed).
SANsurfer Switch Manager GUI
This option installs the SANsurfer Switch Manager GUI only.
Custom
Choose this option for selection of individual components or a combination of components.
InstallAnywhere by Zero G
Cancel
Previous
Next

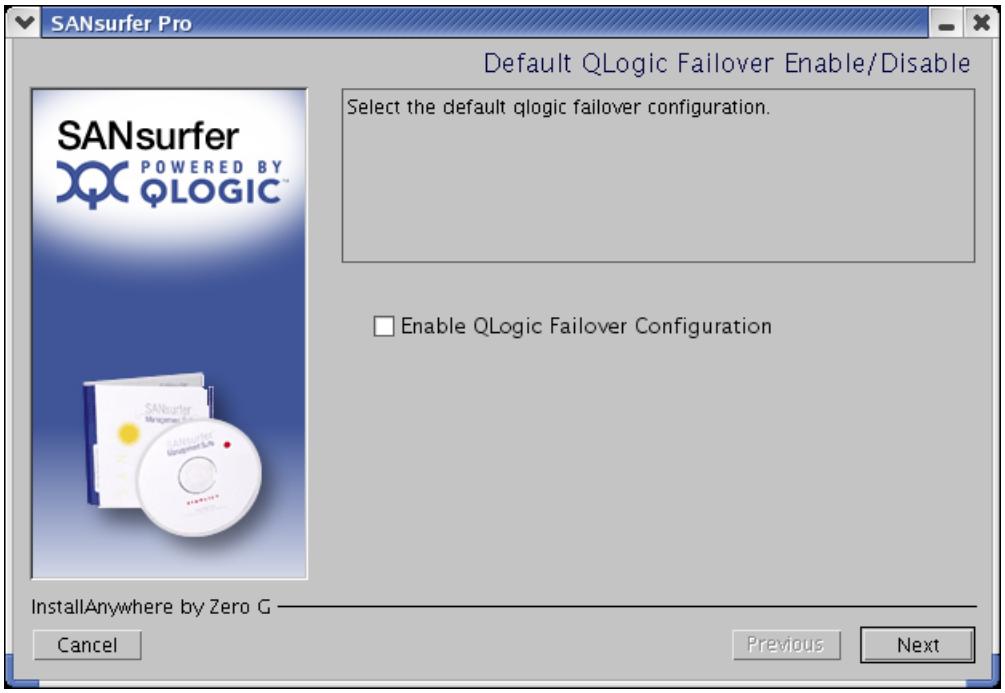
5. Edit the path where you want to install the software or click **Choose** and browse to the location. Click **Next**:



6. Review the Pre-Installation Summary and click **Install** when you're ready:



7. When the Default QLogic Failover Enable/Disable dialog box displays, click **Next**.




*NOTE:* This feature may be enabled through SANsurfer Management Suite at a later date.

8. Click **Done** when the installation process completes.

### Installing the Red Hat Driver

To install the Red Hat driver, follow these steps:

1. Download the latest drivers from the **Download** section of the QLogic website (http://www.qlogic.com/support/drivers_software.asp) and extract them.
2. Verify that you have the kernel source package installed:

```
[root@localhost qlogic]# rpm -qa |grep kernel-source
```

3. Uncompress and extract the distribution file:

```
[root@localhost qlogic]# tar zxvf qla2x00-v7.07.01-dist.tgz
```

4. Change to the directory where you extracted the distribution file:

```
[root@localhost qlogic]# cd qlogic
```

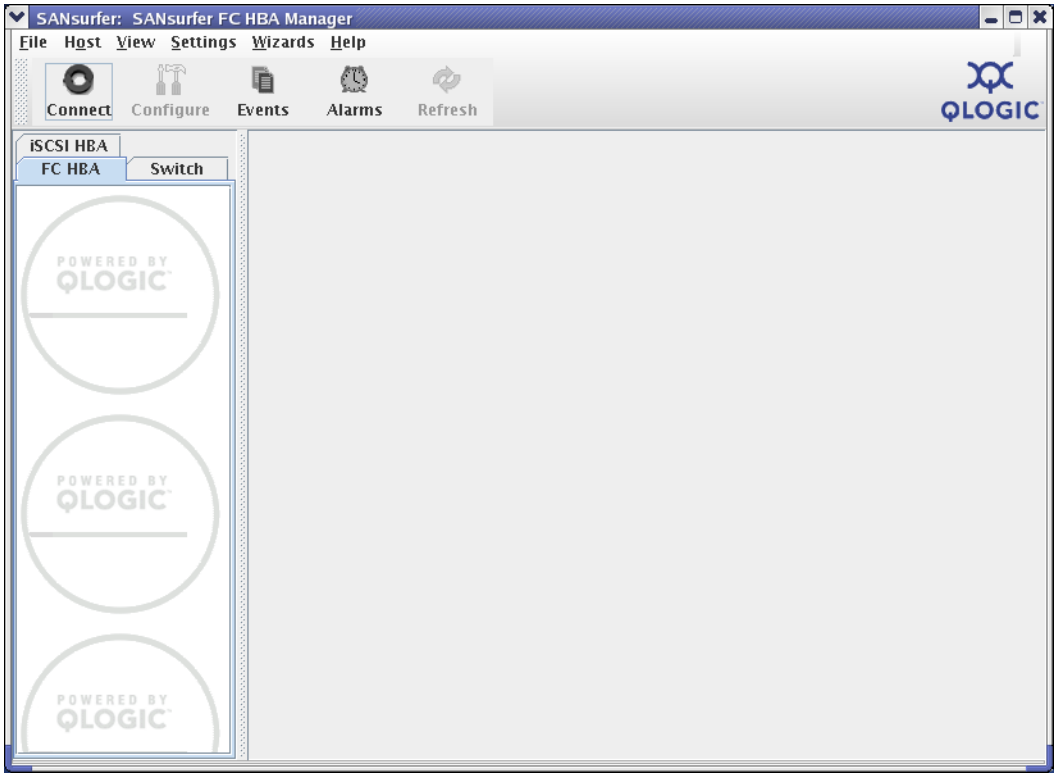
5. Execute the "qlinstall" script to extract and install the driver:

```
[root@localhost qlogic]# ./qlinstall
```

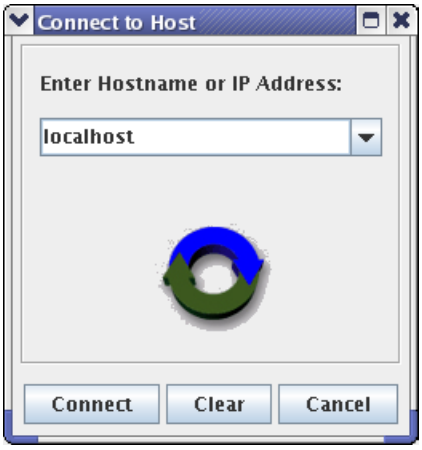
### Configuring the HBA

On Red Hat, follow these steps to configure the QLogic HBA:

1. Launch SANsurfer.
2. From the SANsurfer FC HBA Manager tab, click **Connect**:



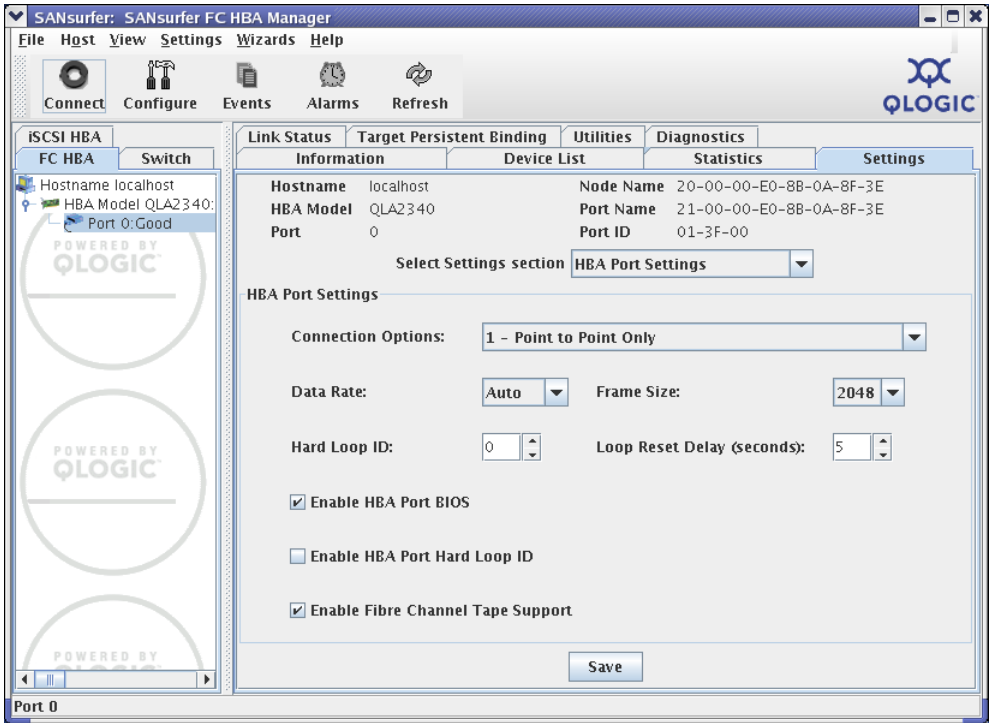
3. From the Connect to Host dialog, select the host from the list and click **Connect**.




4. From the **SANsurfer FC HBA Manager** window:
   a. Select the desired port from the tree in the left hand frame.
   b. Click the **Settings** tab.
   c. From the **Connection Options** list, select the connection type to use.

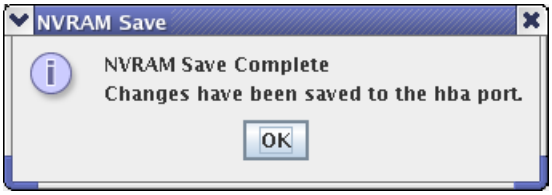
d. Select a **Data Rate** from the list.

e. Click **Save**.




5. Enter the password in the **Security Check** dialog box.

6. Click **OK** to the **NVRAM Save** confirmation message.



# Storage Configuration

This section outlines configuration procedures for the following IBM TotalStorage™ products tested by QLogic:

- Disk Storage Systems Configuration
- Enterprise Storage Server (ESS) Configuration
- FAStT Configuration

## IBM Storage Overview

The IBM TotalStorage Disk Storage systems include the mid-range DS4100 and the enterprise class DS6800 and DS8100. These systems offer scalable, high-performance storage for on demand environments.

The IBM TotalStorage Enterprise Storage Server (ESS) provides high-speed disks and internal Serial Storage Architecture (SSA) disk paths for pipeline data movement. The IBM ESS is a third-generation Seascape disk storage system.

The IBM TotalStorage FAStT Storage Server provides flexible solutions for workgroup and departmental servers that require an external storage. The FAStT uses a Fibre Channel host attachment with Fibre Channel drives.

QLogic has tested the configurations described in this guide under the IBM TotalStorage Proven program, introduced by IBM to help customers identify storage solutions and configurations that have been pre-tested for interoperability. The IBM TotalStorage Proven program is one of IBM's efforts to develop and deliver products and solutions that work together with third party products.

For more information about the IBM storage solutions, refer to the IBM website at the following addresses:

### Disk Storage Systems Product Information

http://www-03.ibm.com/servers/storage/disk/index.html

### ESS Product Information

http://www-03.ibm.com/servers/storage/disk/ess/

### FAStT Product Information

http://www-03.ibm.com/servers/storage/disk/ds4000/

### IBM Storage Proven Program

http://www-03.ibm.com/servers/storage/proven/index.html

# Disk Storage Systems Configuration

The following sections illustrate how to configure the IBM TotalStorage DS8100 model. The configuration steps may also be used for the DS6800 and DS4100 models.


- Assumptions
- Configuration Steps


## Assumptions

The configuration procedures assume that:

- You have allocated storage space of suitable size for the application being used.
- You have created and defined a RAID group within the storage.
- Your storage system has an available port.

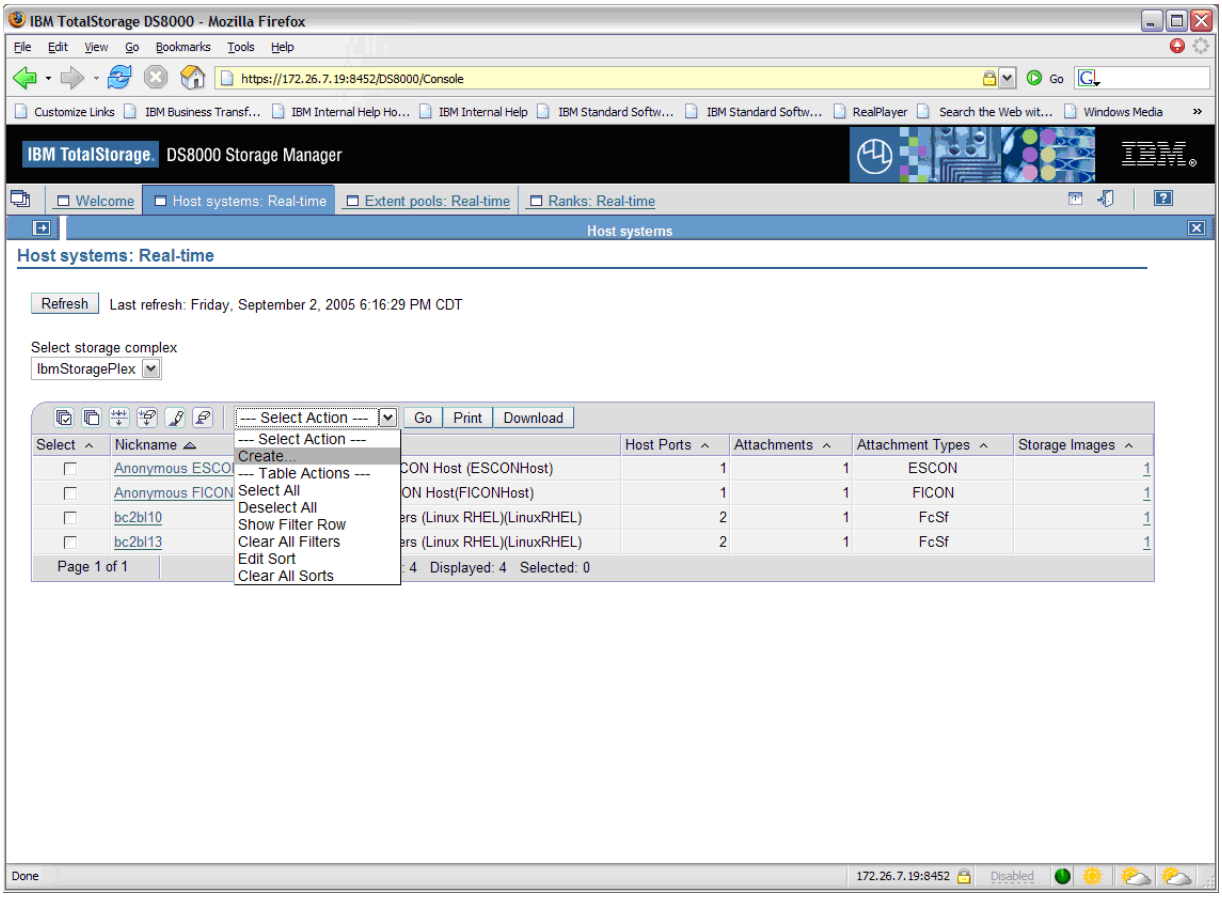
## Configuration Steps

Completing these steps as outlined on the following pages will prepare the allocated storage for connection to the fabric:

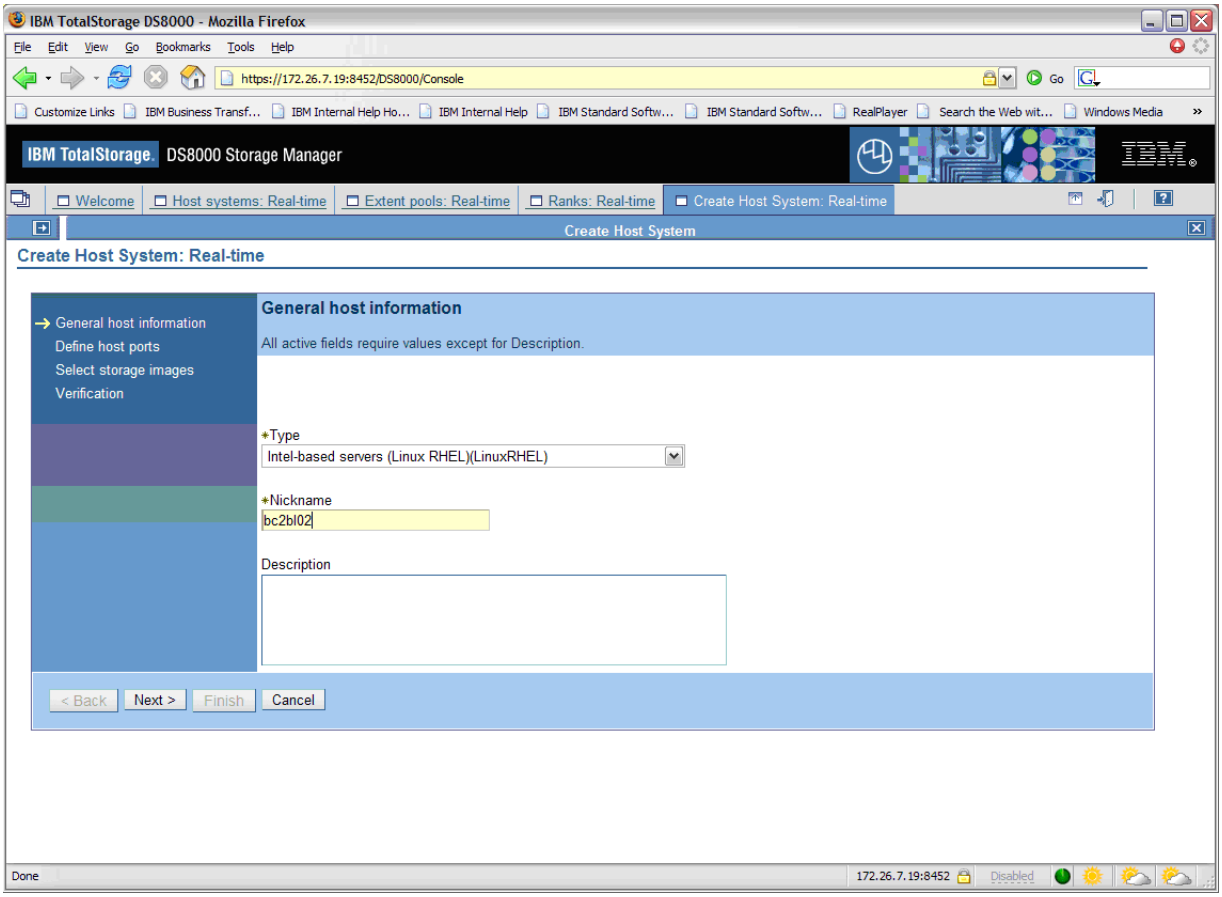

- Creating a Host
- Creating a Rank
- Creating An Extent Pool
- Creating Volumes
- Create Volume Groups

## Creating a Host

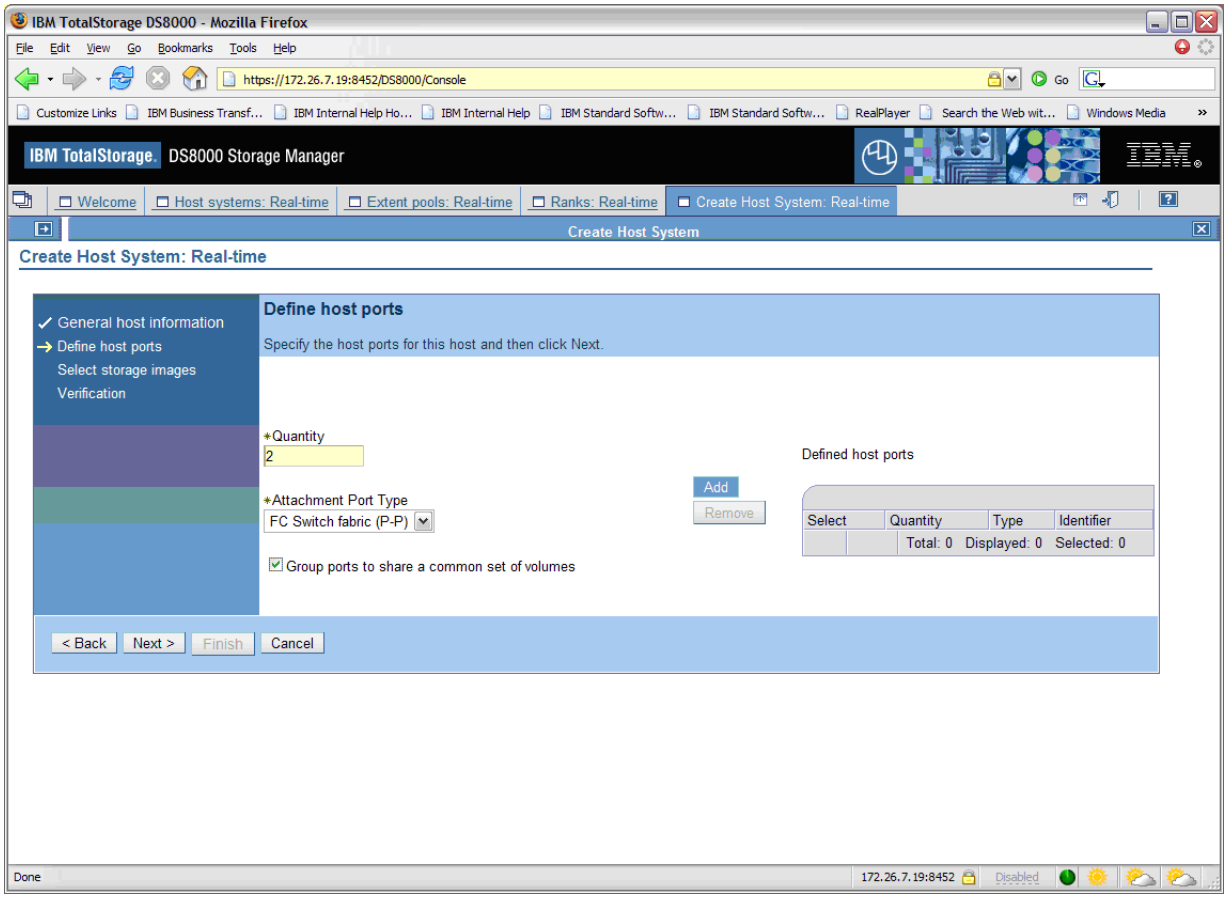
1. From the Welcome page, click the **Host systems: Real-time** tab.
2. Choose the **Select Action** menu and click **Create**.



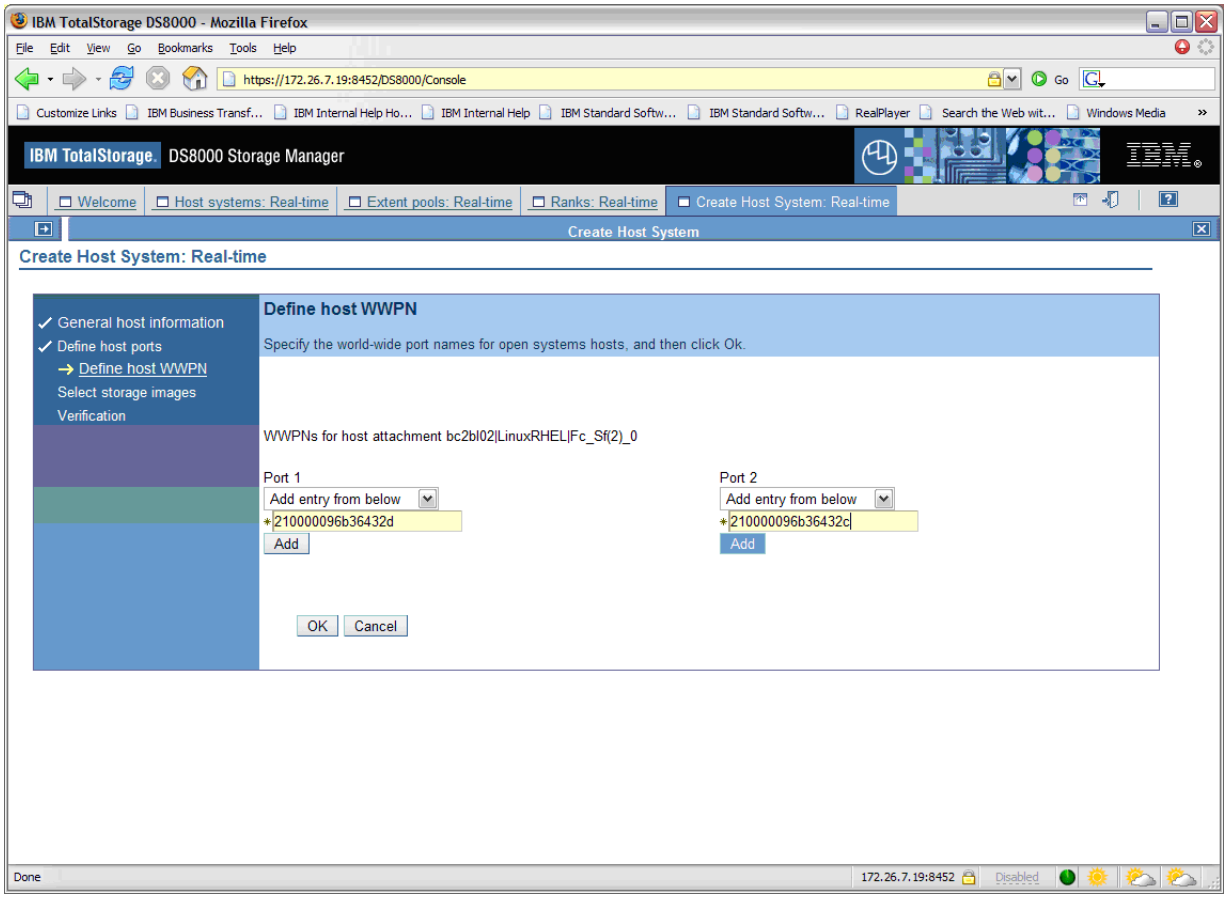
3. On the General host information page:
   a. From the **Type** list, select the type of host system where you will connect the LUNs.
   b. Enter a **Nickname** for the host. Entering a Description is optional.
   c. Click **Next**.



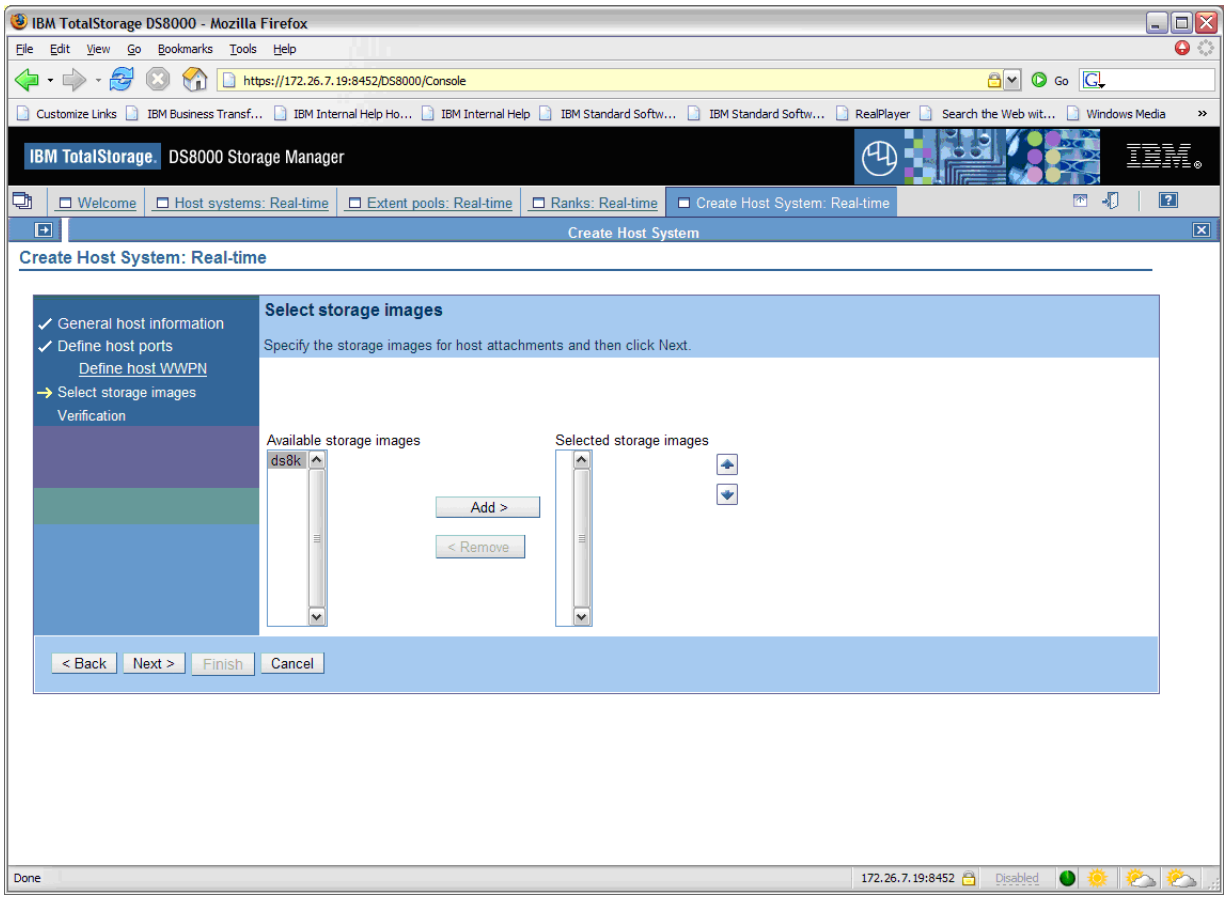
4. On the Define host ports page:
   a. Specify the number of ports to which you are attaching in the **Quantity** field.
   b. Select the port type from the **Attachment Port Type**.
   c. Click **Next**.



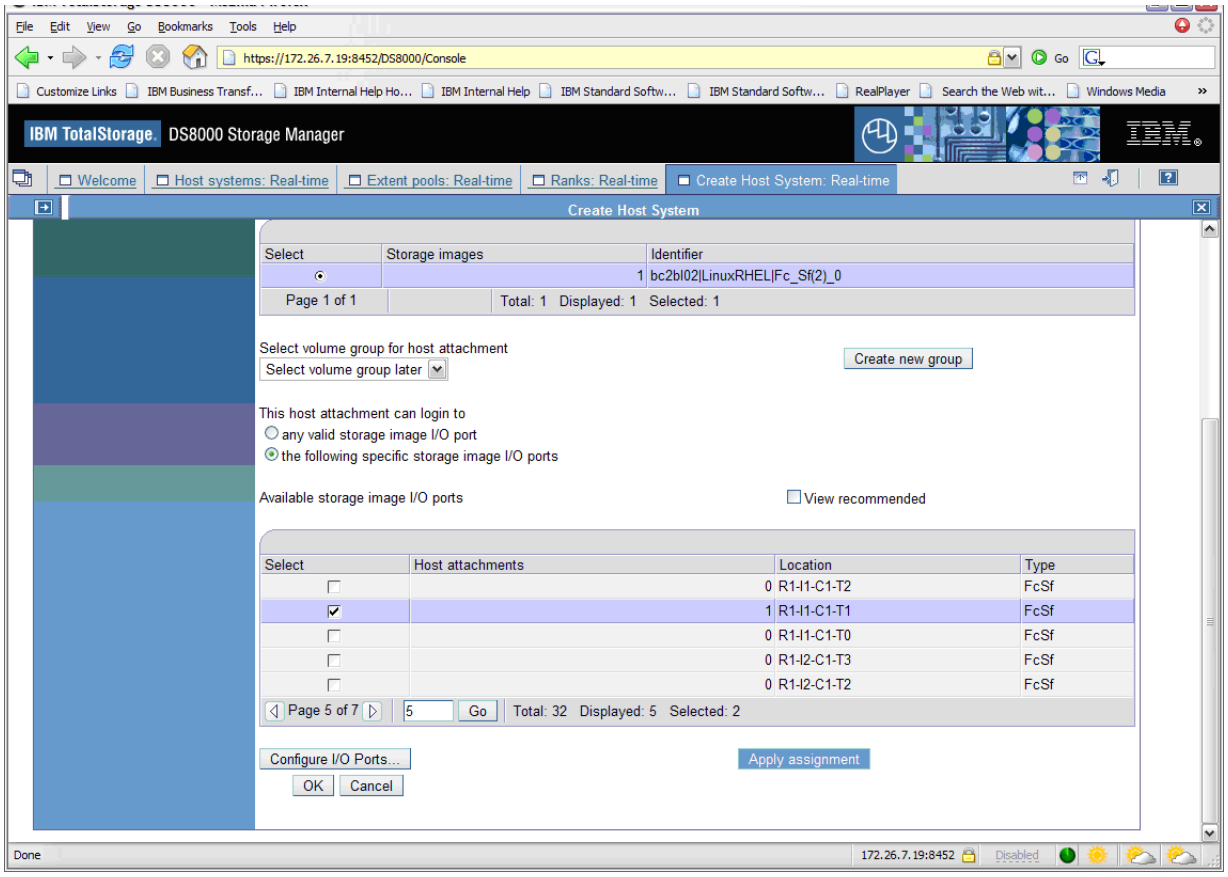
5. On the Define host WWPN page:
   a. Enter the **WWPN** for each of the host ports (Host Adapter WWPN).
   b. Click **Add** to add each entry to the list.
   c. Click **OK** when you have added the WWPN for all the host ports.



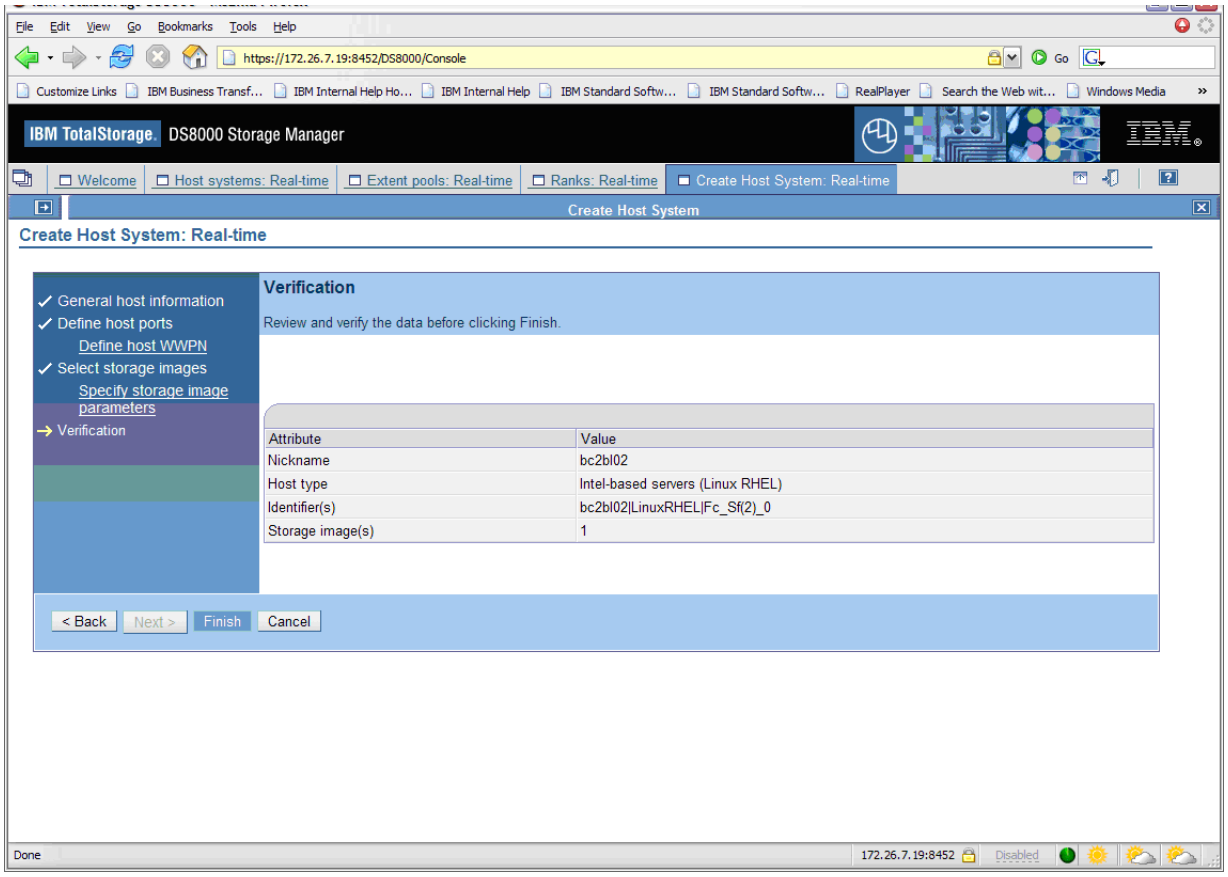
6. Highlight the storage image you want to use in the list on the left and click **Add** to select it. Click **Next**.



7. Check the box next to the port through which the LUNs will be exported to the host and click **OK**:

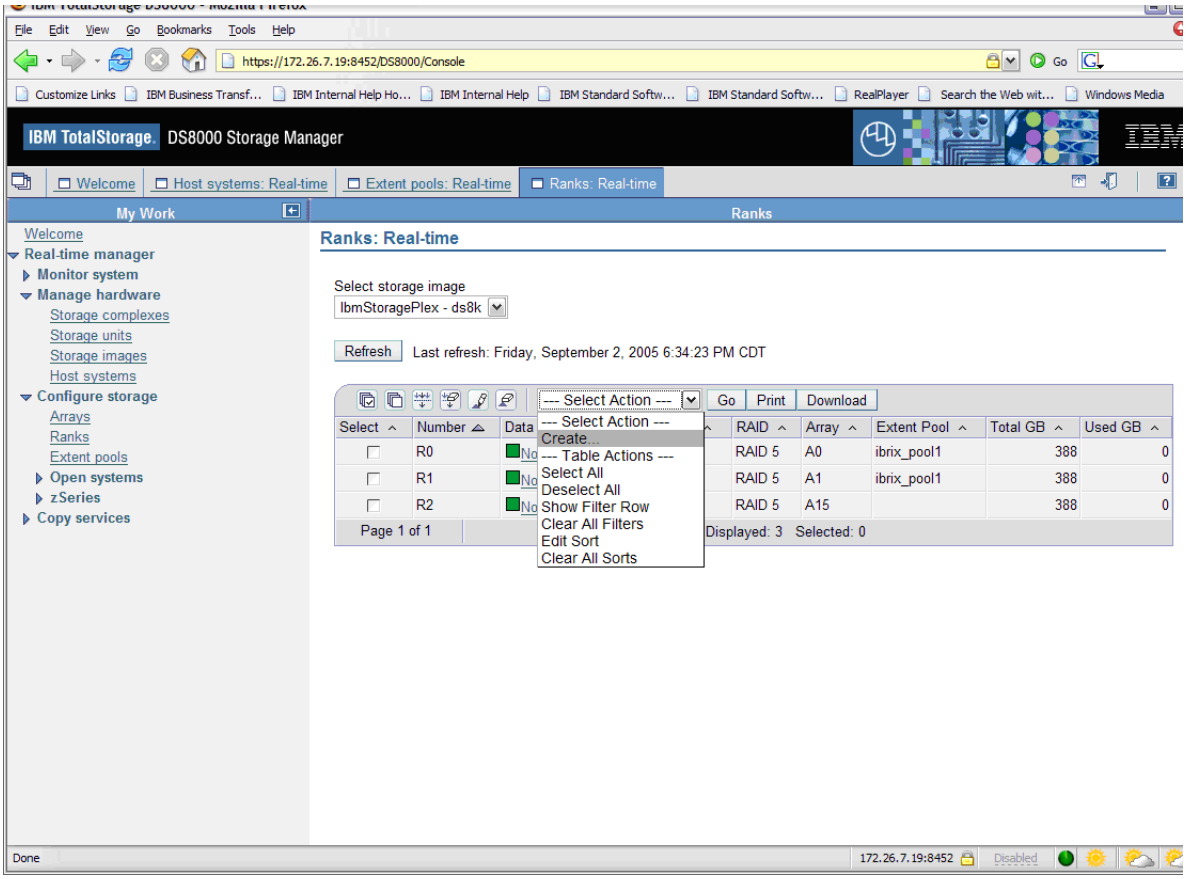


8. Verify that the configuration is correct and click **Finish** when you are ready. To change one of the settings, click **Back** and make the appropriate changes.

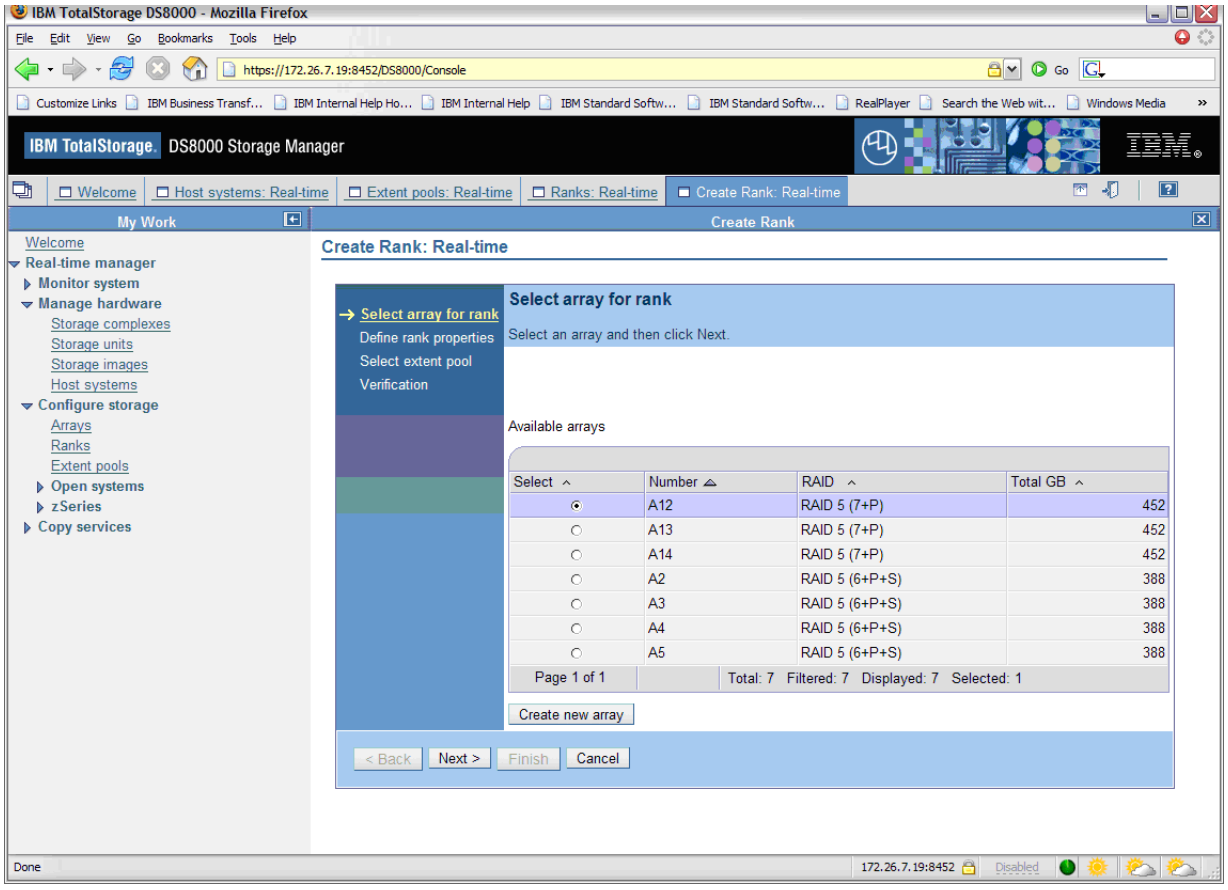


## Creating a Rank

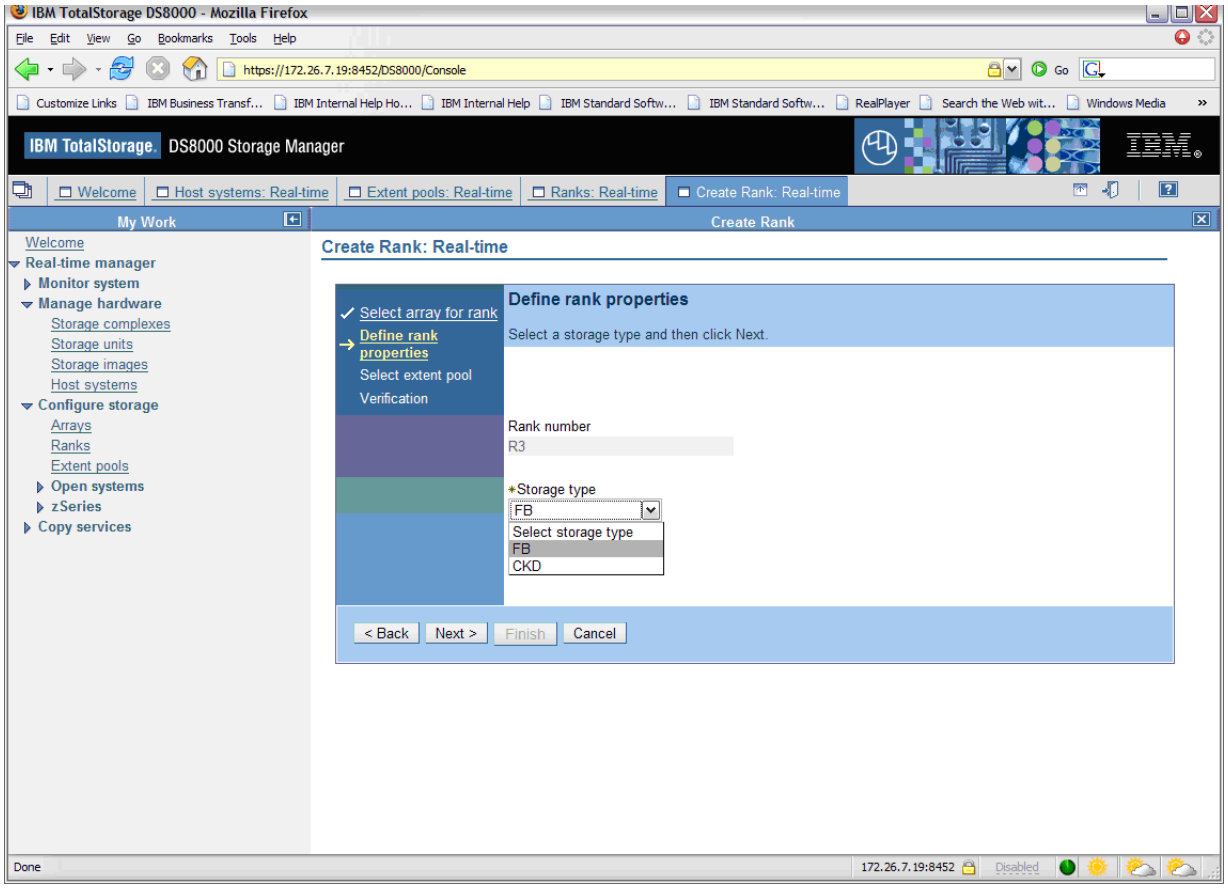
1. From the **Ranks: Real-time** tab:
   a. Select the Storage Image you previously added to your host from the **Select Storage Image** menu.
   b. Click **Create** from the Select Action menu.



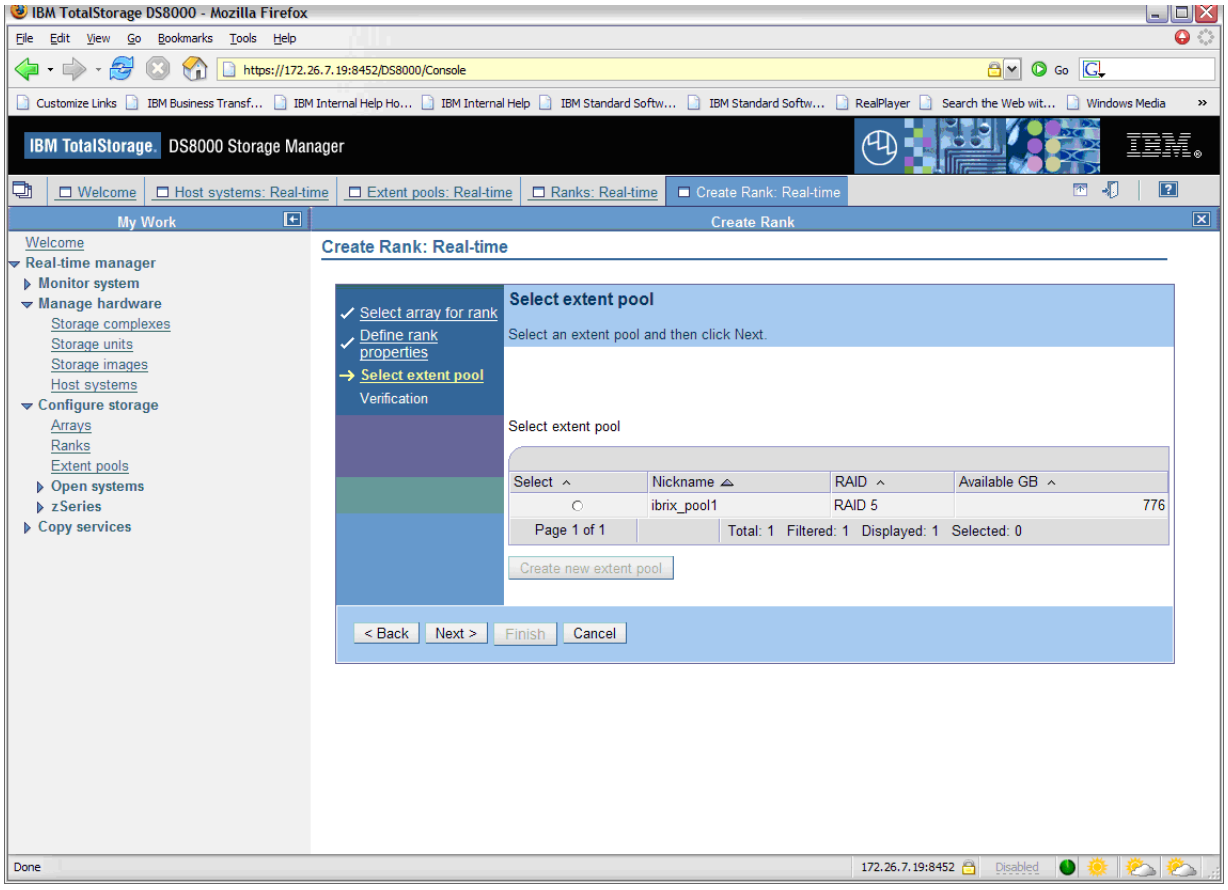
2. Check the corresponding box to select an array for the rank and click **Next**.



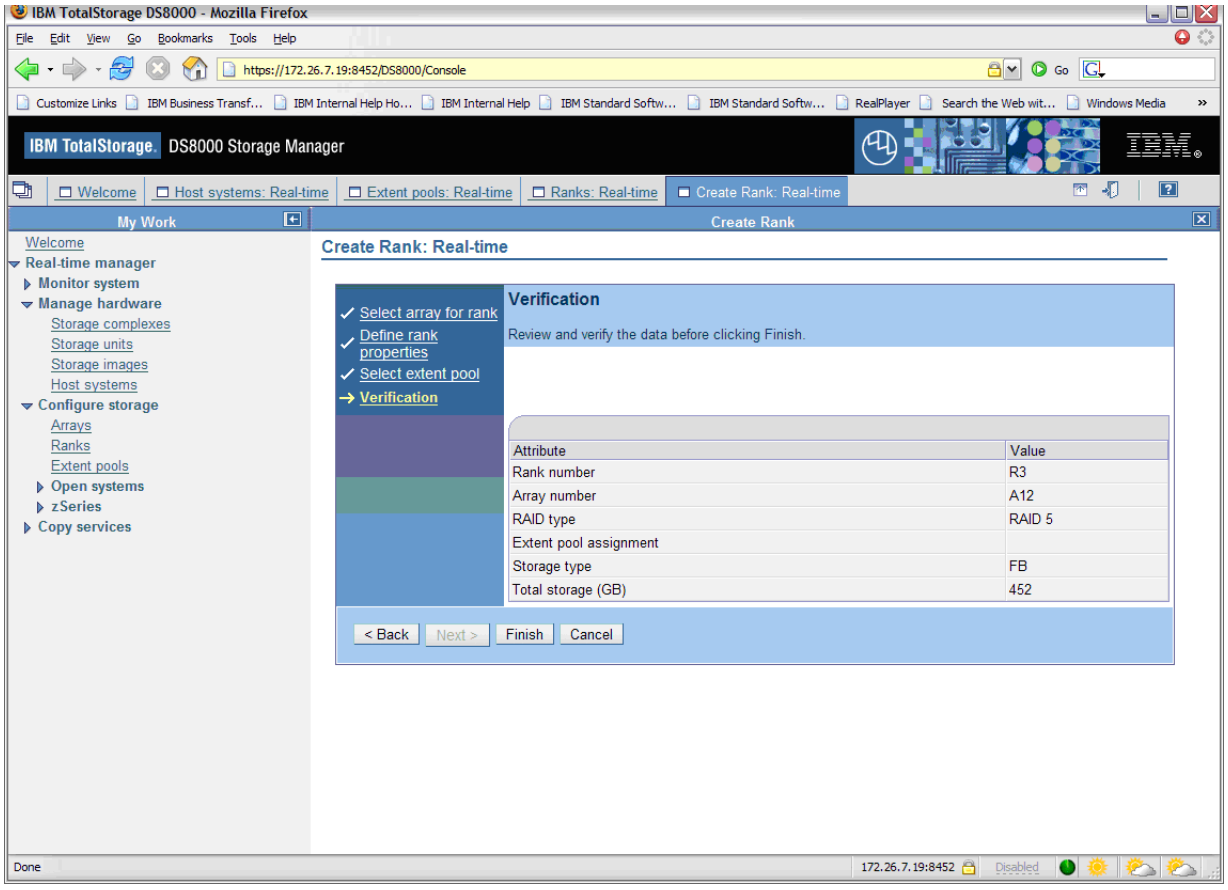
3. On the Define rank properties page, select **FB** from the Storage Type menu and click **Next**:



4. On the Select extent pool, *do not select an extent pool* and click **Next**.

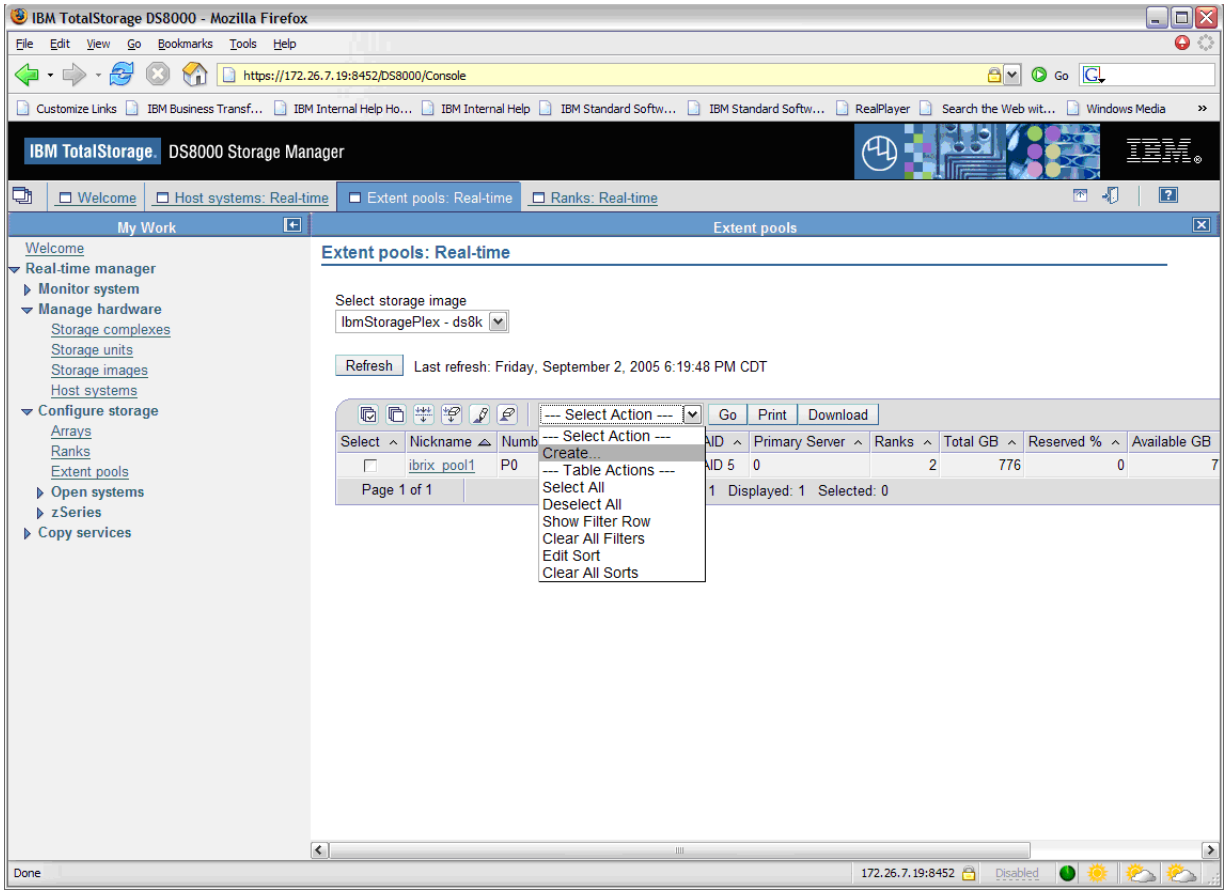


5. Verify the Rank configuration and click **Finish** when you are ready:

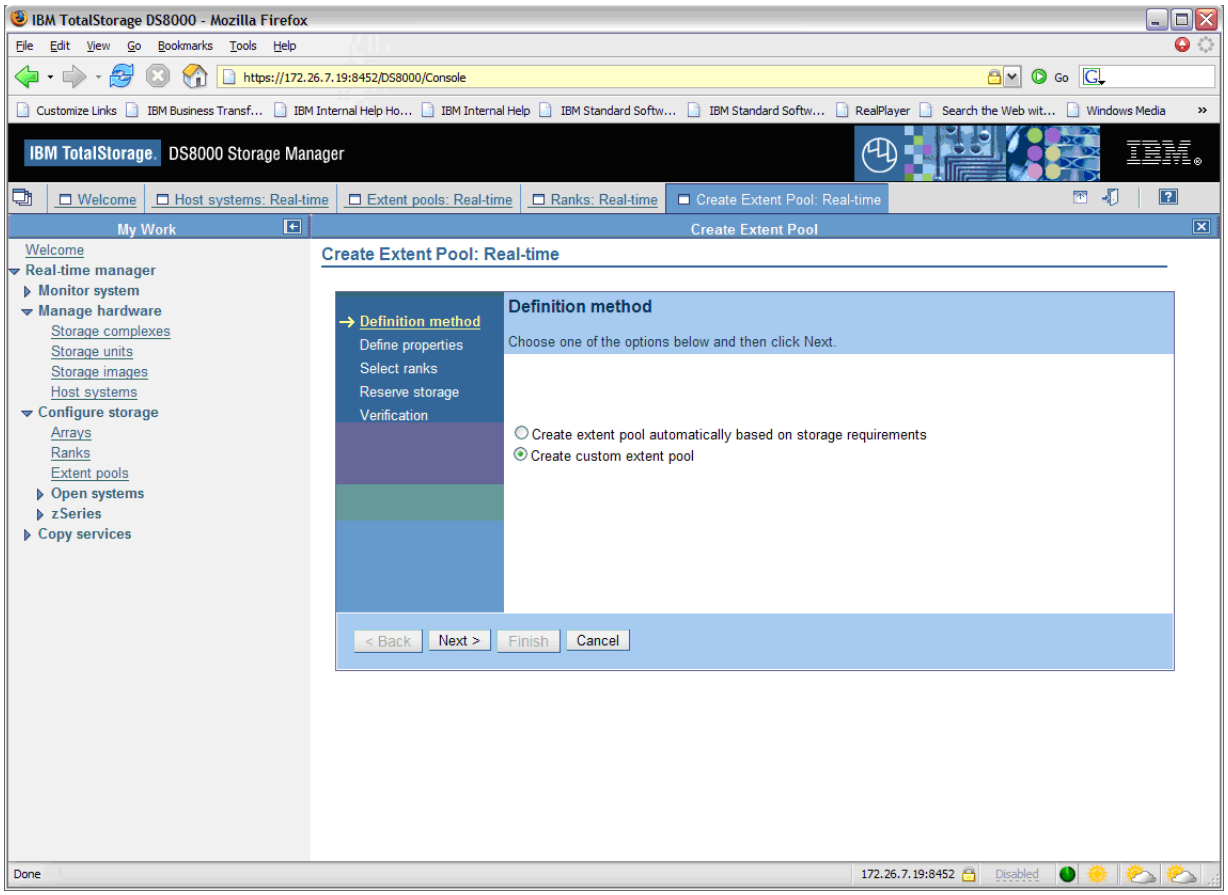


## Creating An Extent Pool

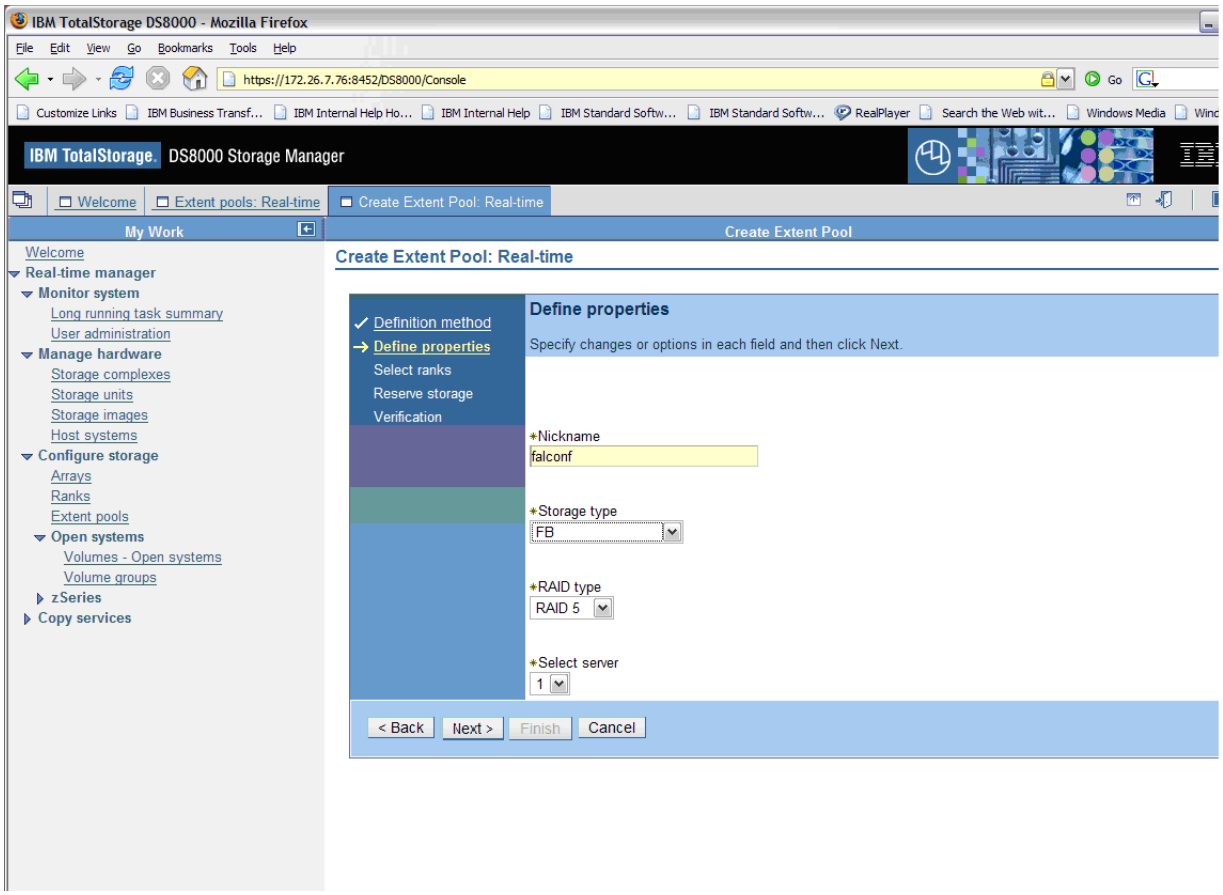
1. Choose the **Extent pools: Real-time** tab.
2. From the **Select Action** menu select **Create**:



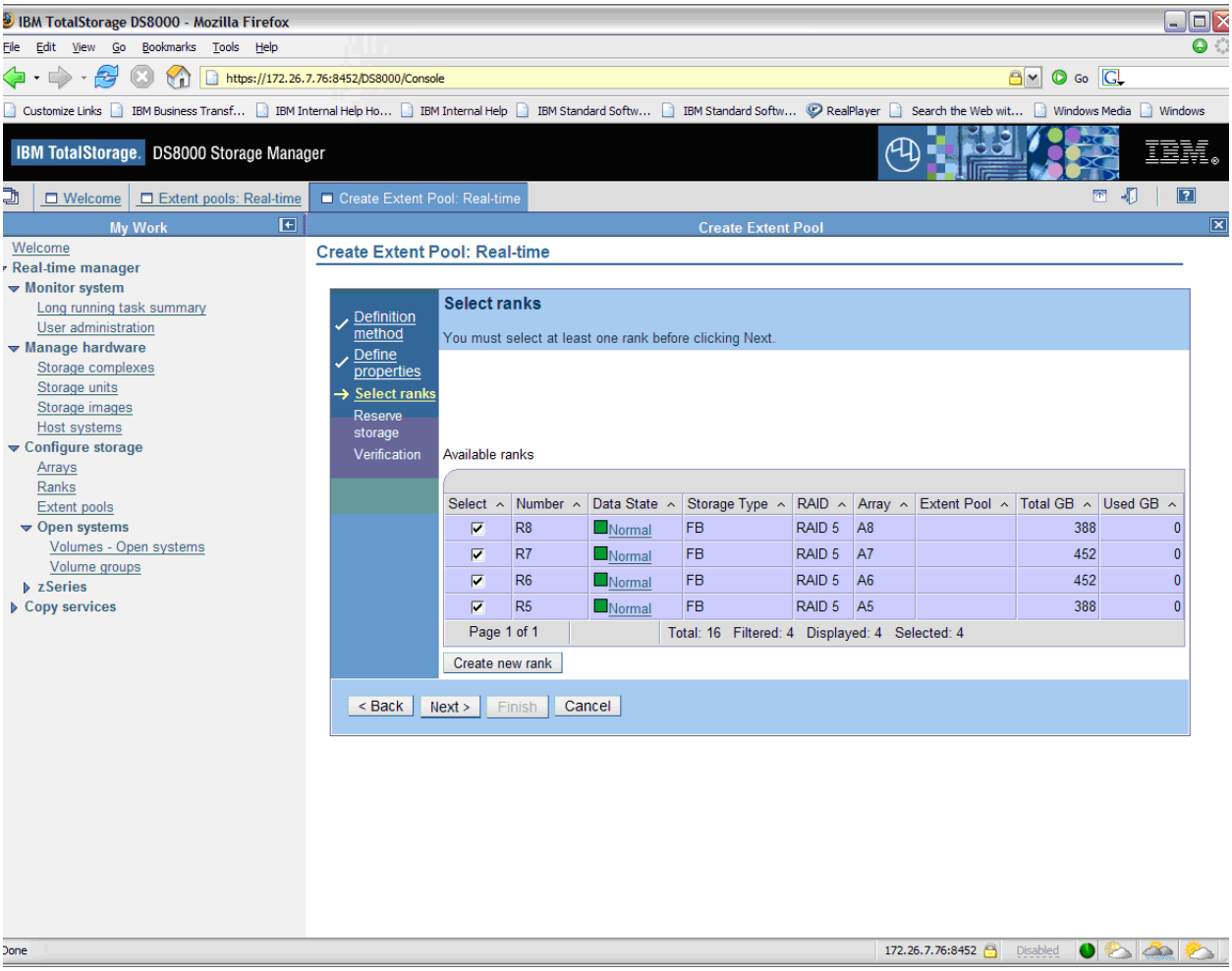
3. On the Definition method page, select **Create custom extent pool** and click **Next**:



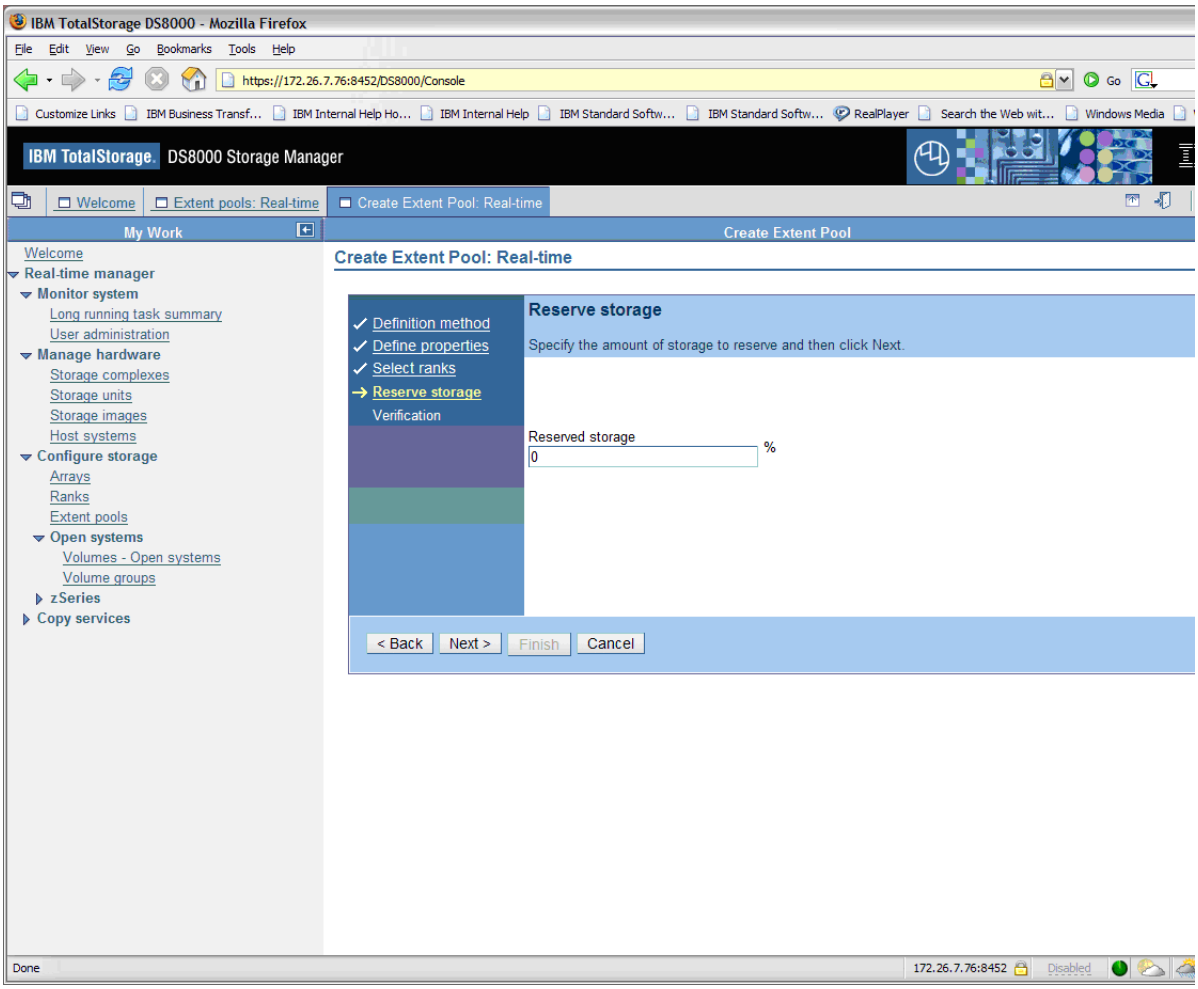
4. On the Define properties page:
   a. Enter a Nickname for the extent pool.
   b. Select the Storage type, RAID type, and server from the respective lists.
   c. Click **Next** to continue.



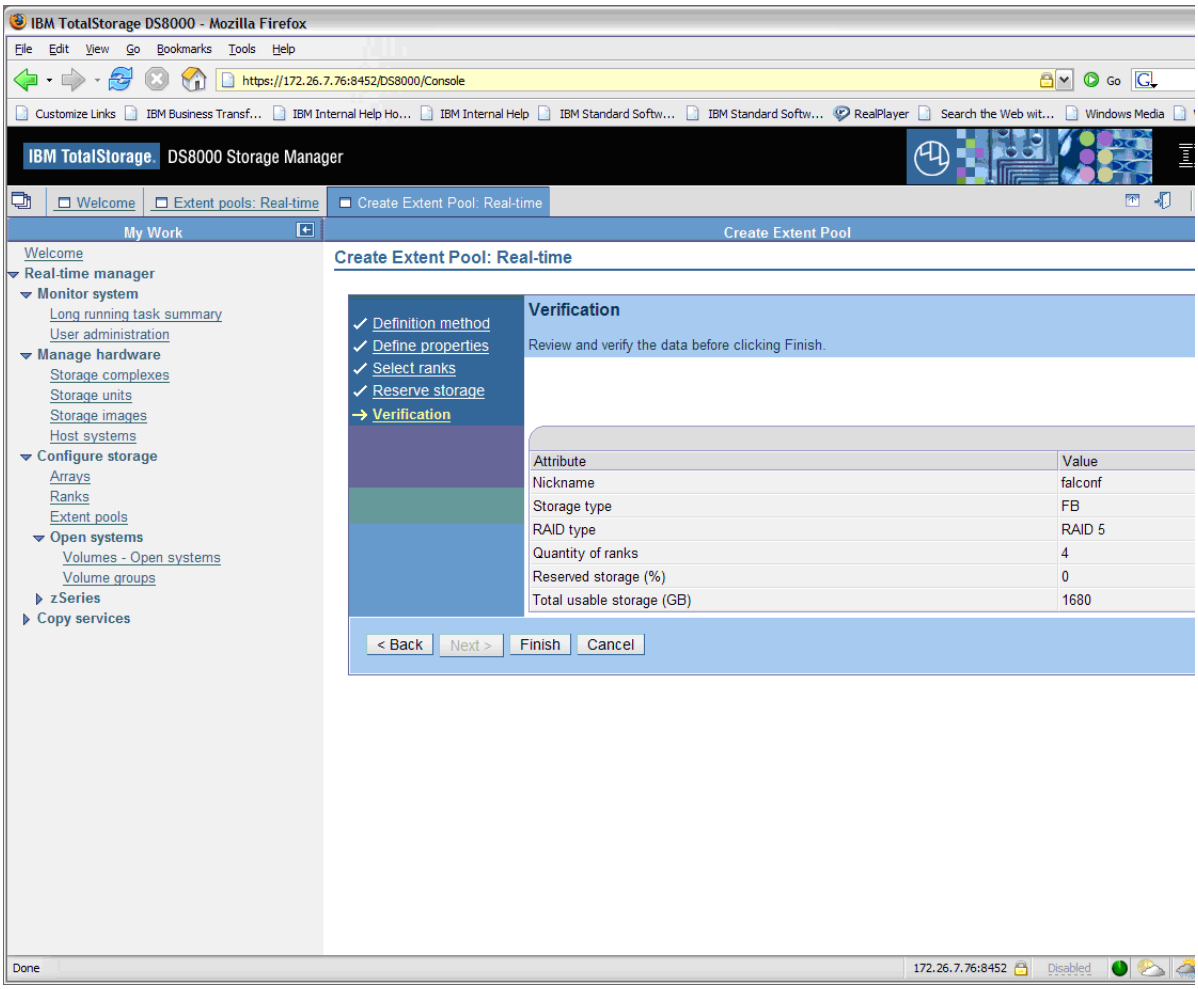
5. Check the **Select** box next to each rank you want to include in the extent pool and click **Next** when you are ready:



6. Enter the percentage of storage you want to reserve and click **Next** to continue.:

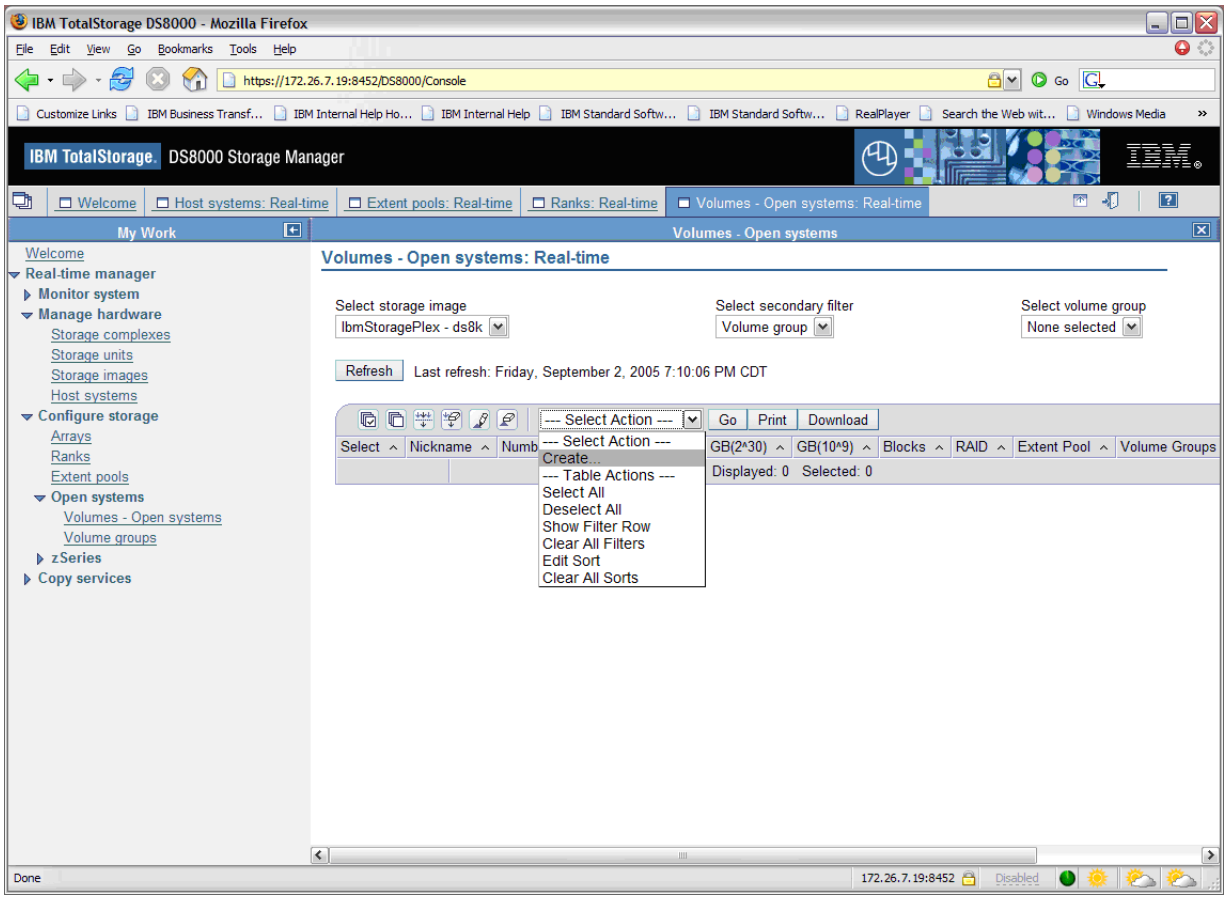


7. Verify that the information is correct and click **Finish** when you are ready. To change any of the settings, click **Back** instead.

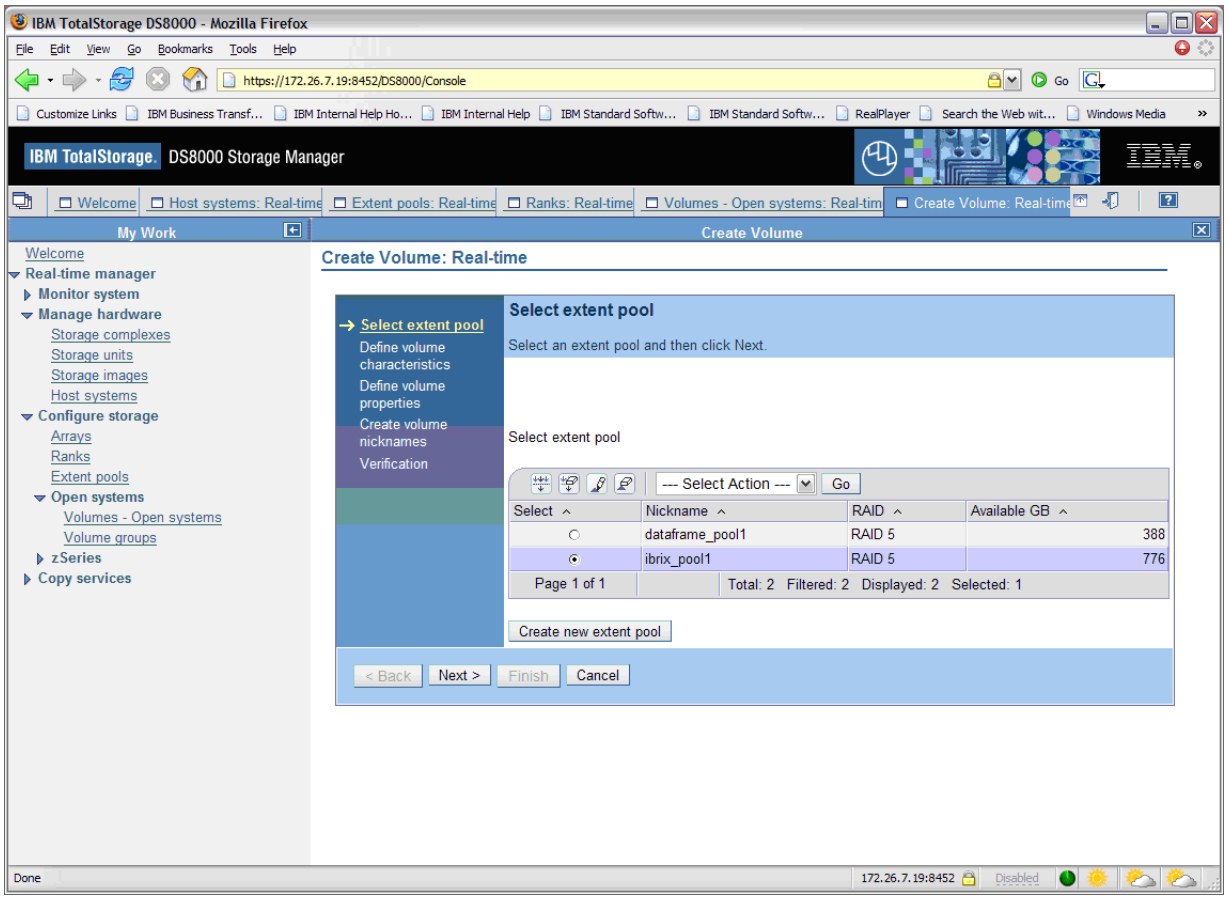


## Creating Volumes

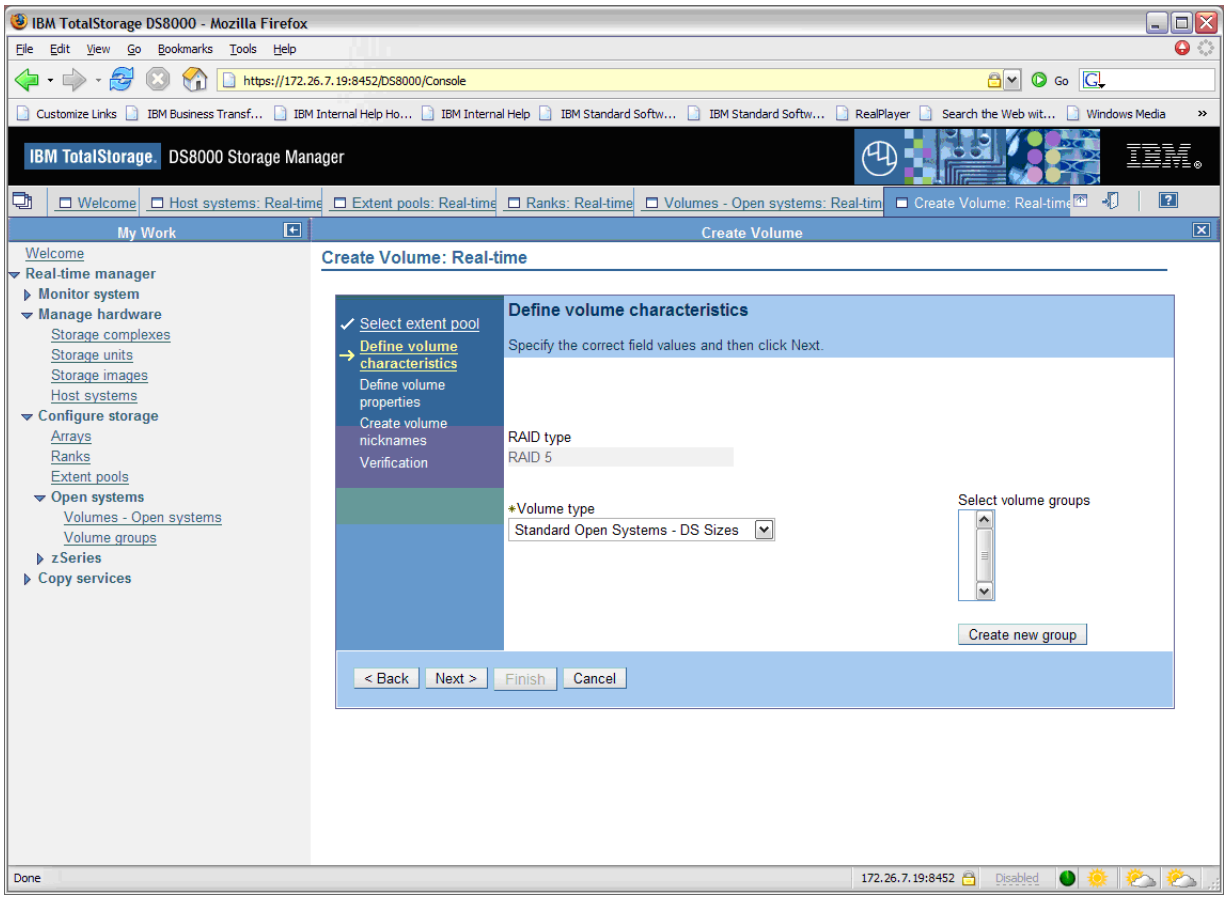
1. Click on the **Volumes - Open systems: Real-time** tab.
2. From the Select Action menu, choose **Create** and click **Go** to begin:



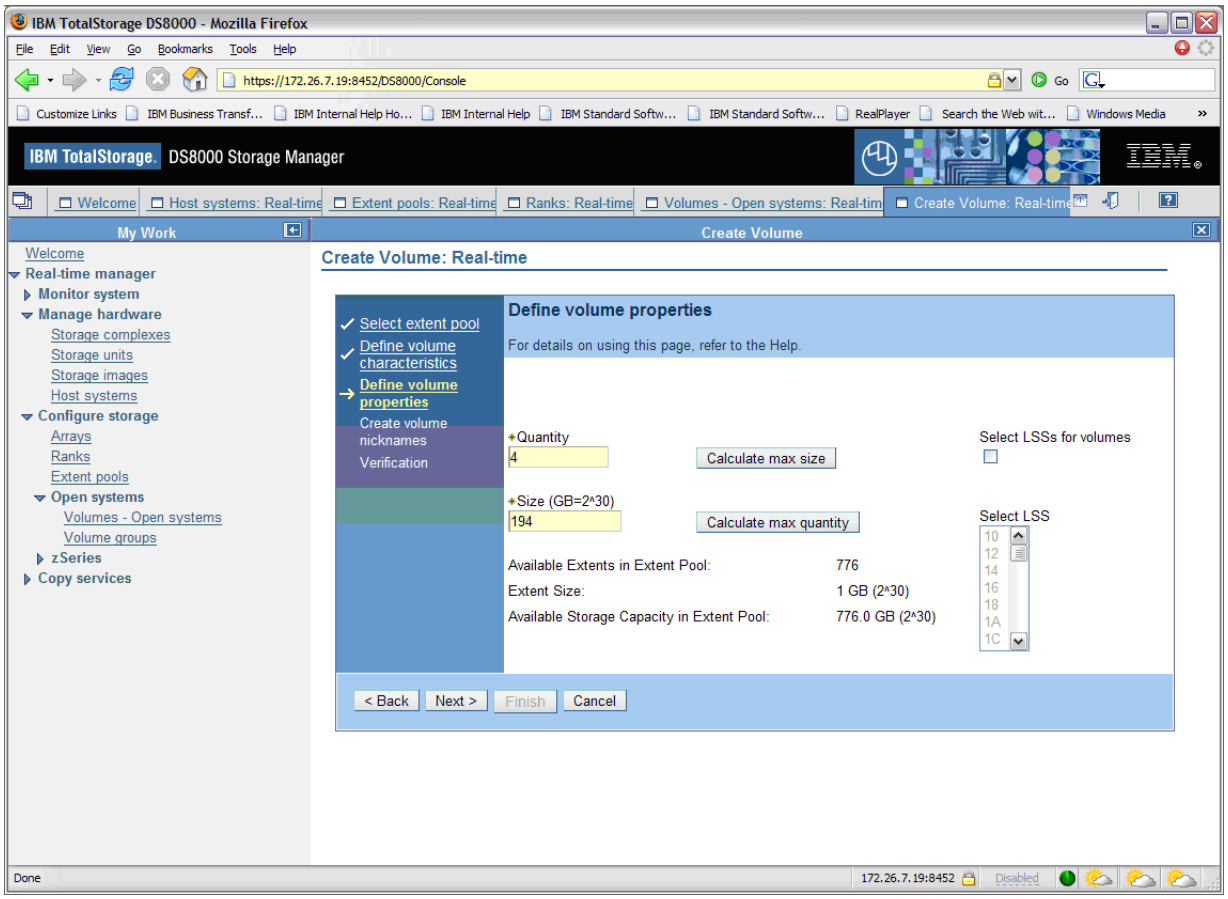
3. Select an extent pool and click **Next**:



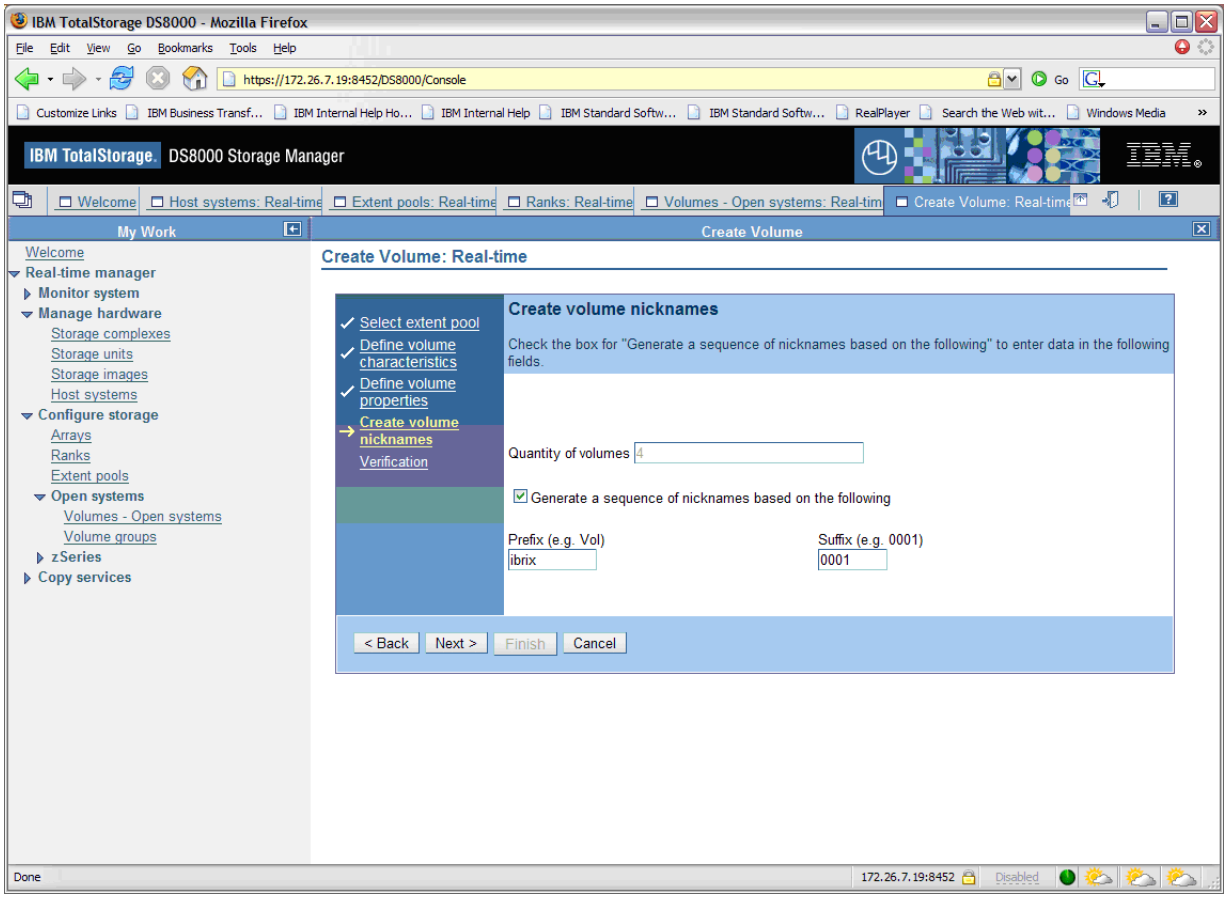
4. Select the desired **Volume type** from the list and click **Next**:



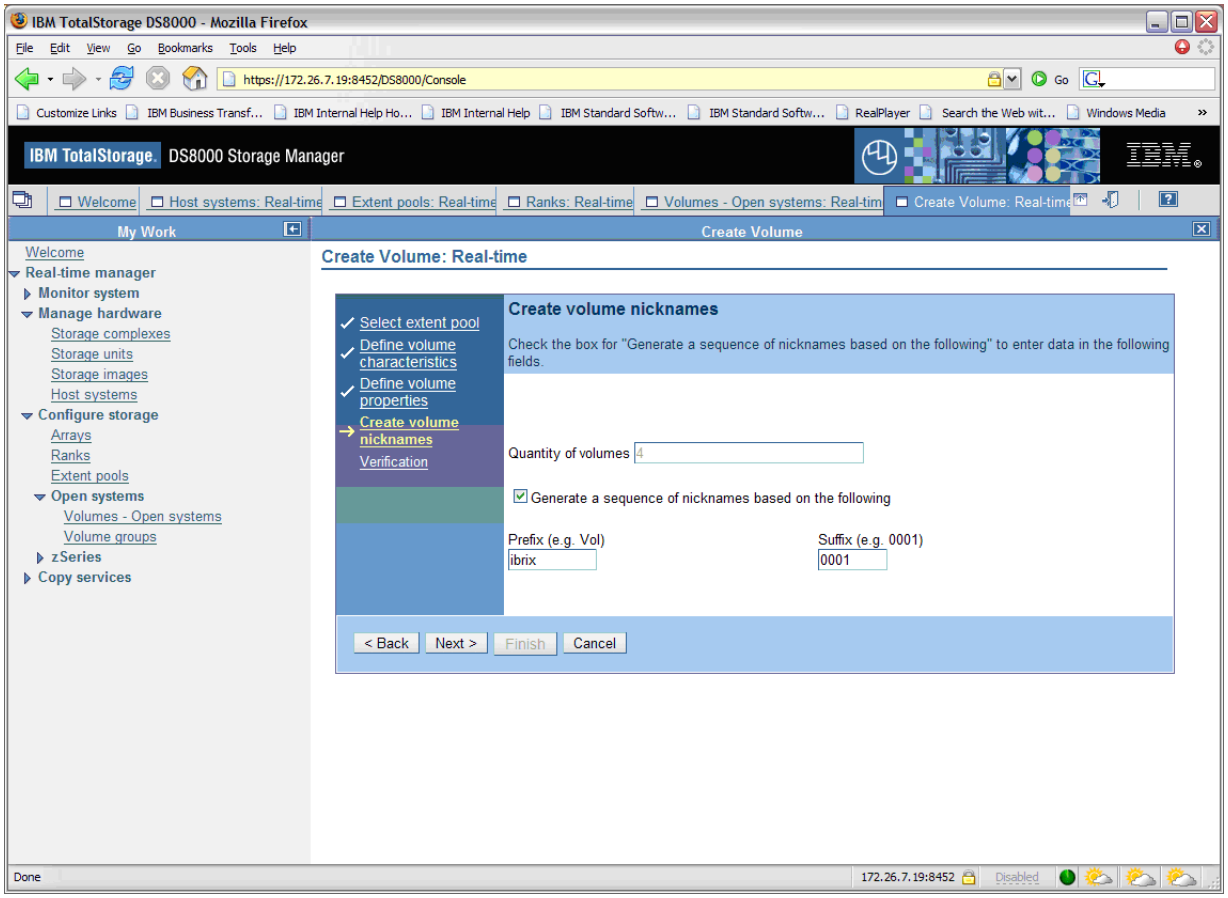
5. Enter the number of volumes you want in the **Quantity** field and the size of each volume in the **Size** field. For example, 4 volumes with 194GB per volume. Click **Next** to continue:



6. Create the nickname(s) for your volume(s) by specifying a **Prefix** and **Suffix** value. Click **Next** to continue:

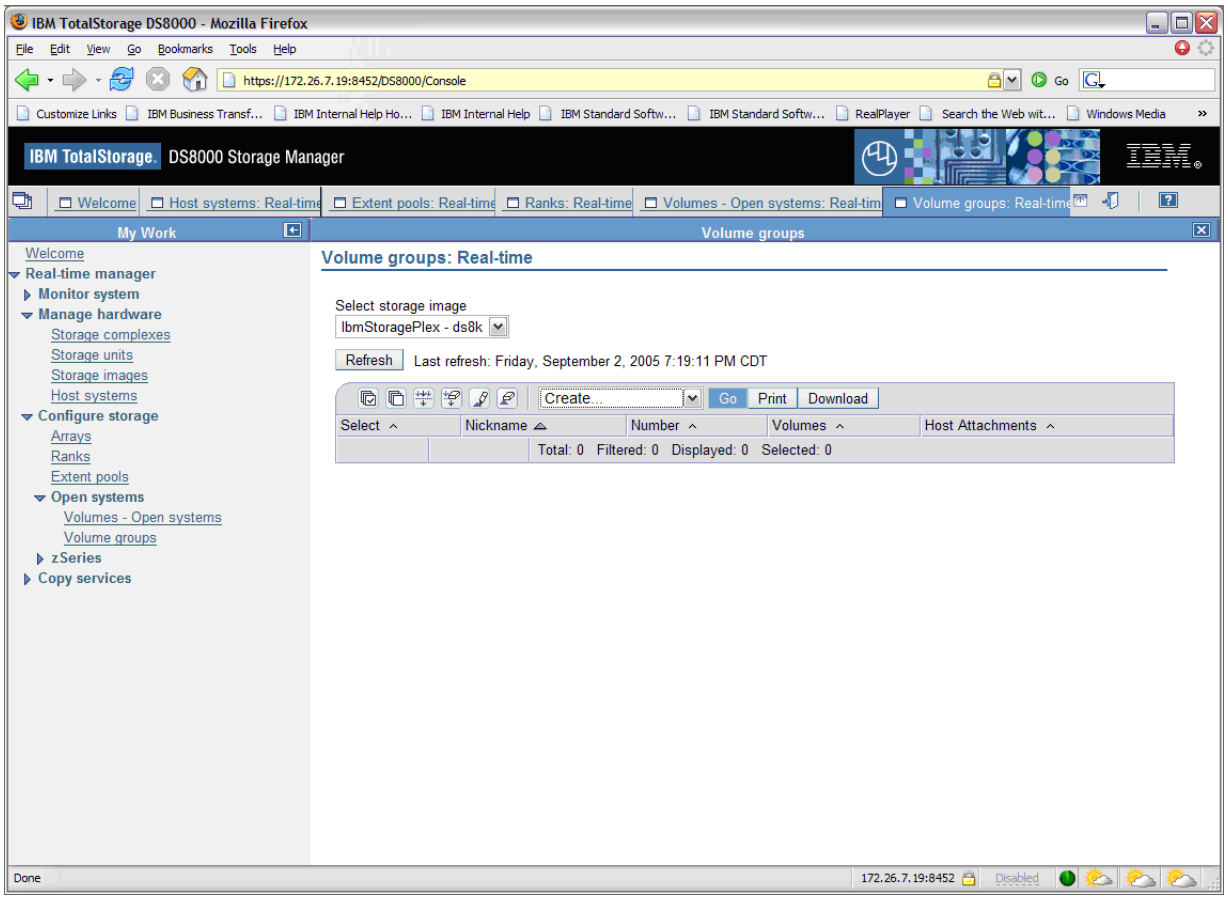


7. Verify that the information is correct and click **Finish** when you are ready. To change any of the settings, click **Back** instead.

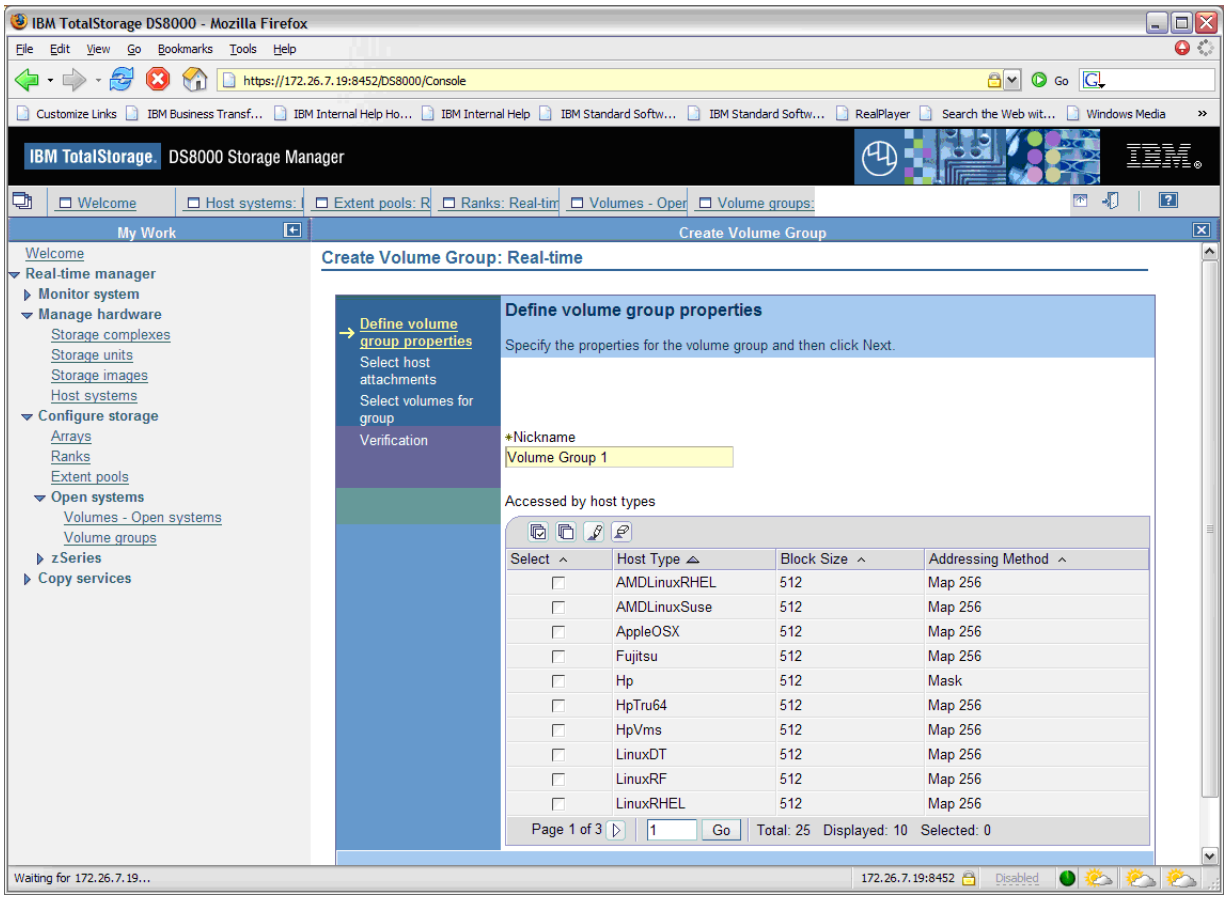


## Create Volume Groups

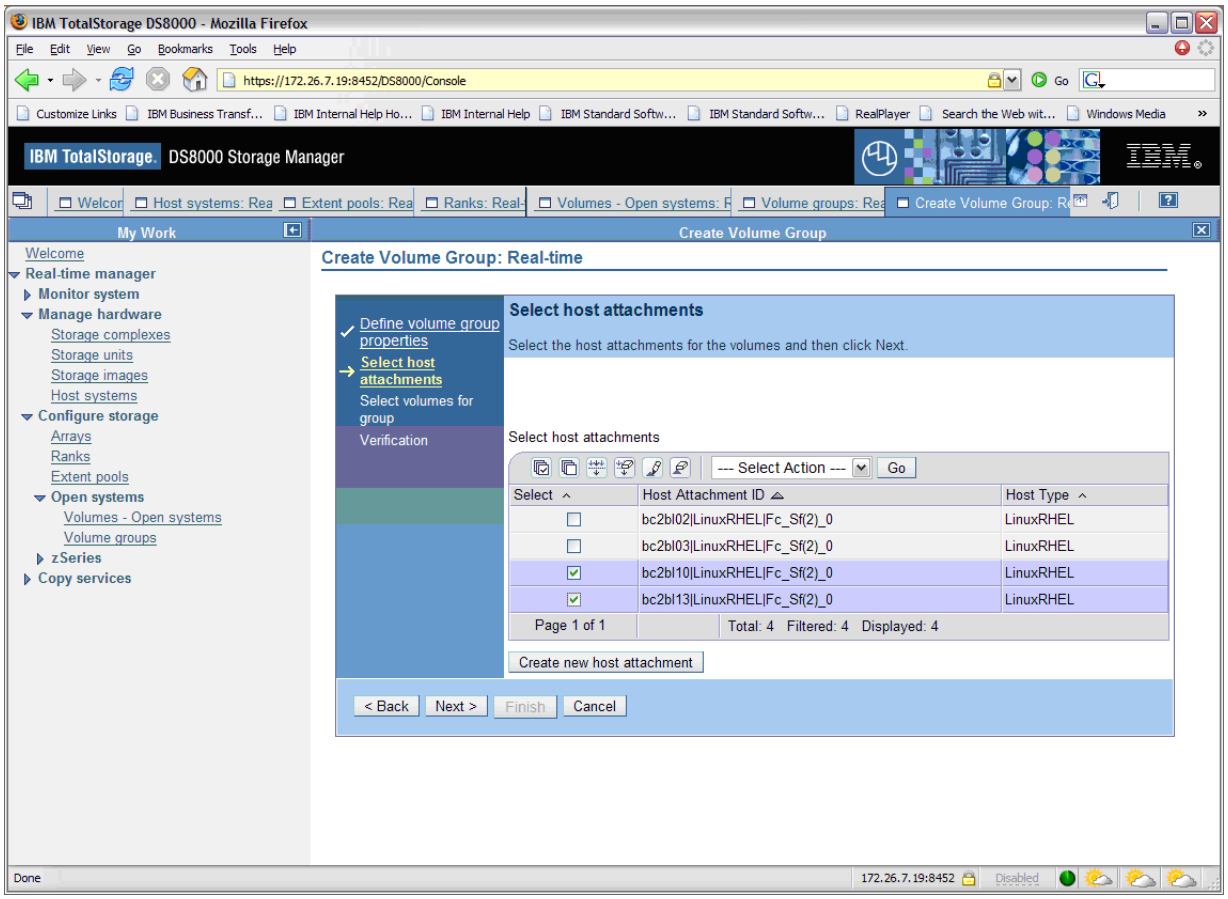
1. Click the **Volume groups: Real-time** tab.
2. From the Select Action menu, choose **Create** and click **Go** to begin:



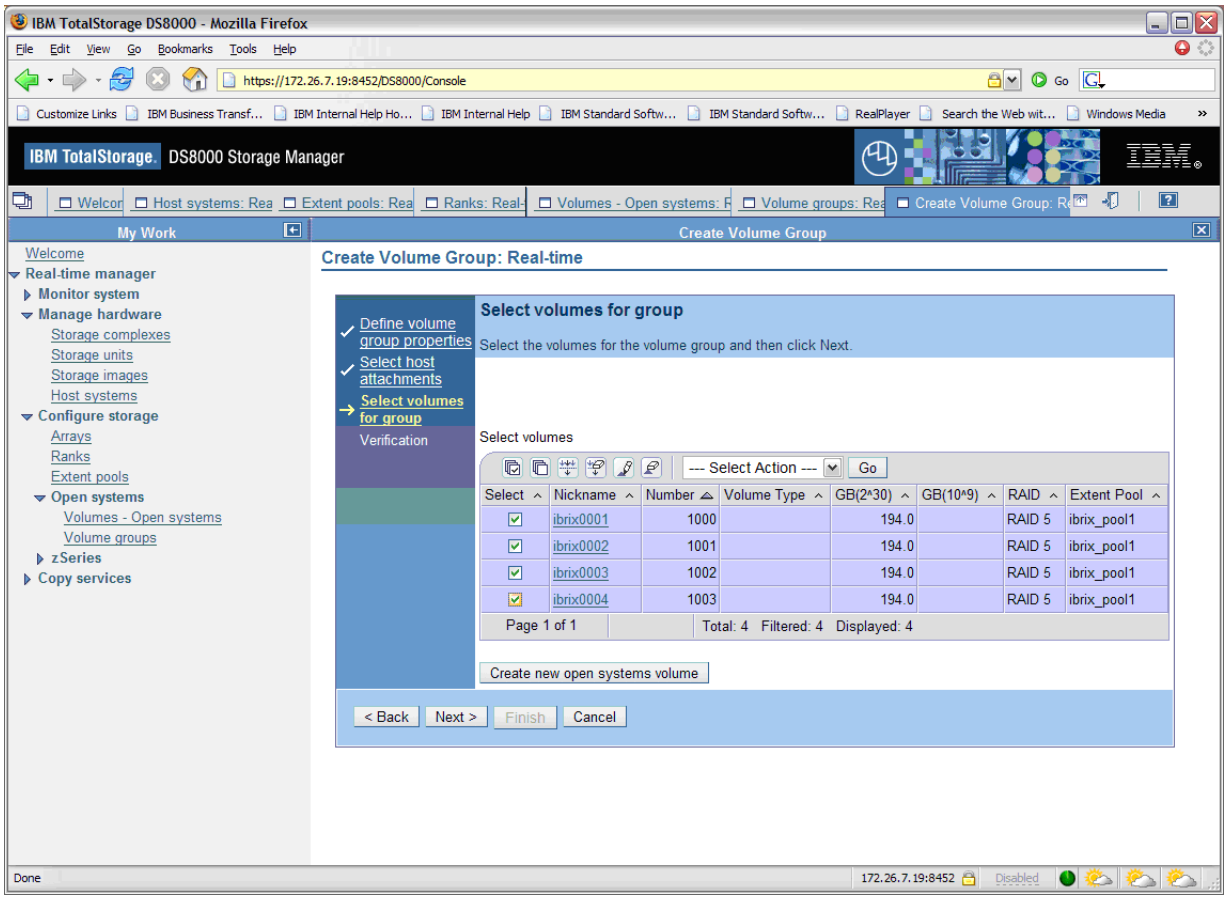
3. Enter a **Nickname** for the volume group and the host type properties. Click **Next** to continue:



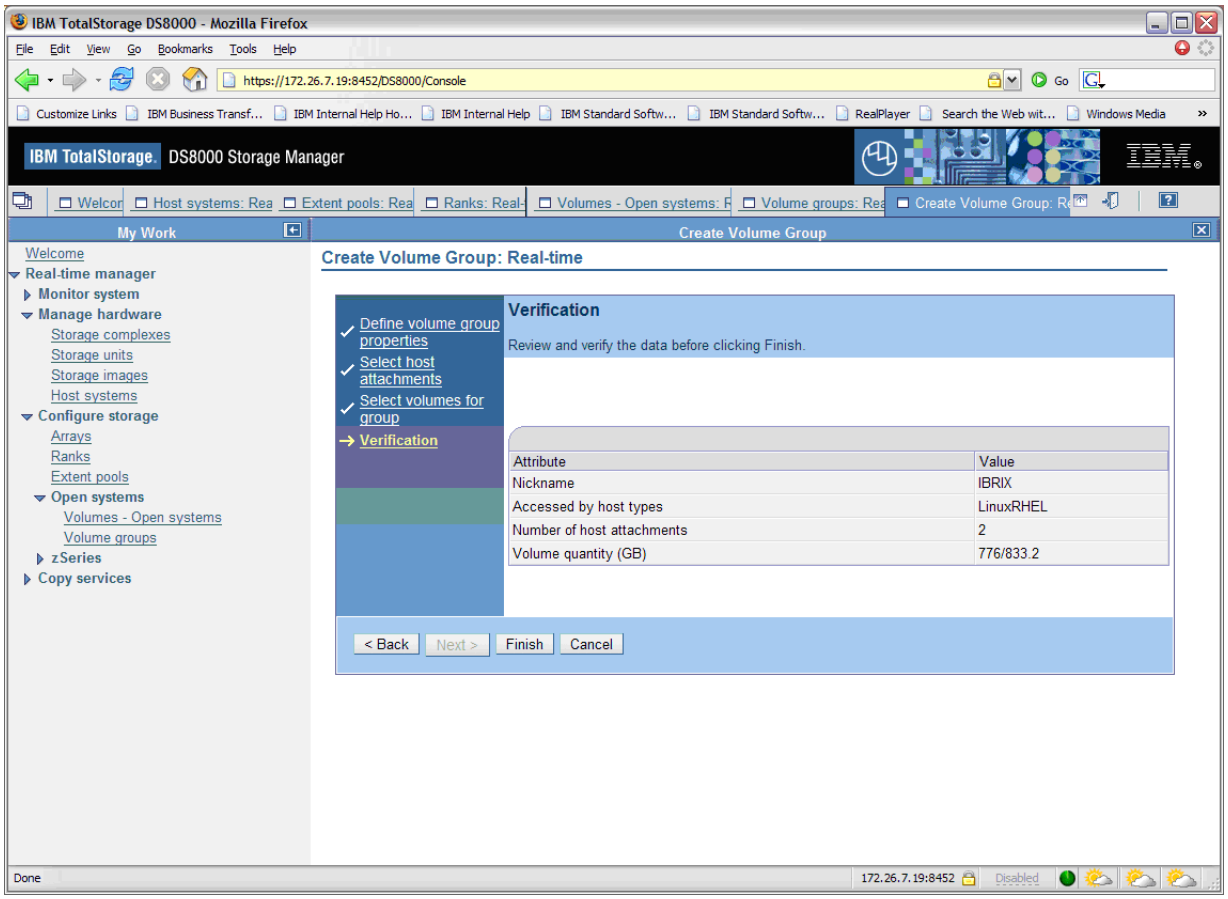
4. Select the host attachments for the volume group and click **Next** to continue:



5. Select the volumes to include in the volume group and click **Next** to continue:



6. Verify that the information is correct and click **Finish** when you are ready. To change any of the settings, click **Back** instead.



# Enterprise Storage Server (ESS) Configuration

The following sections describe how to configure the IBM TotalStorage Enterprise Storage Server 800 model:

- Assumptions
- Configuration Steps

## Assumptions

The following procedures assume that:

- You have allocated storage space of suitable size for the application being used.
- You have created and defined a RAID group within the storage.
- Your storage system has an available port.

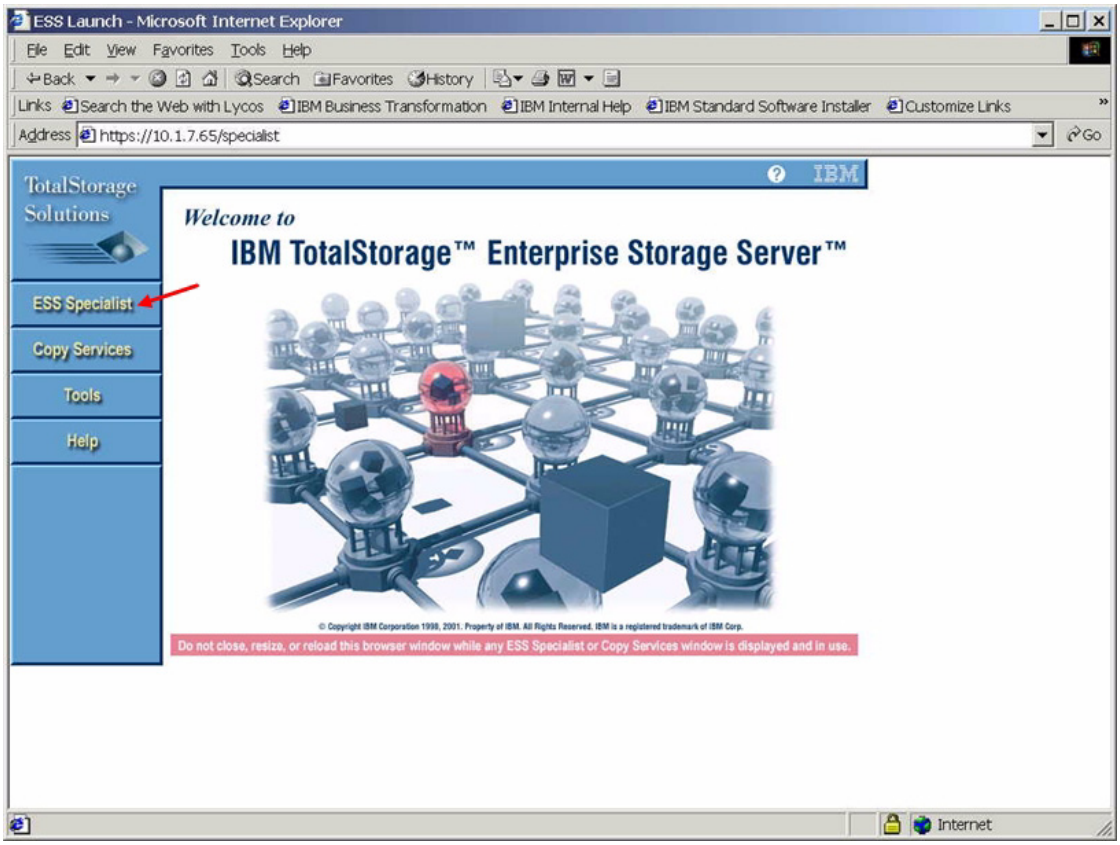
## Configuration Steps

Completing these steps will prepare the allocated ESS storage for connection to the fabric:

- Opening the ESS Specialist Management Application
- Configuring Disk Groups
- Configuring the Port Type
- Defining the Host System
- Adding Volumes
- Changing Volume Assignments

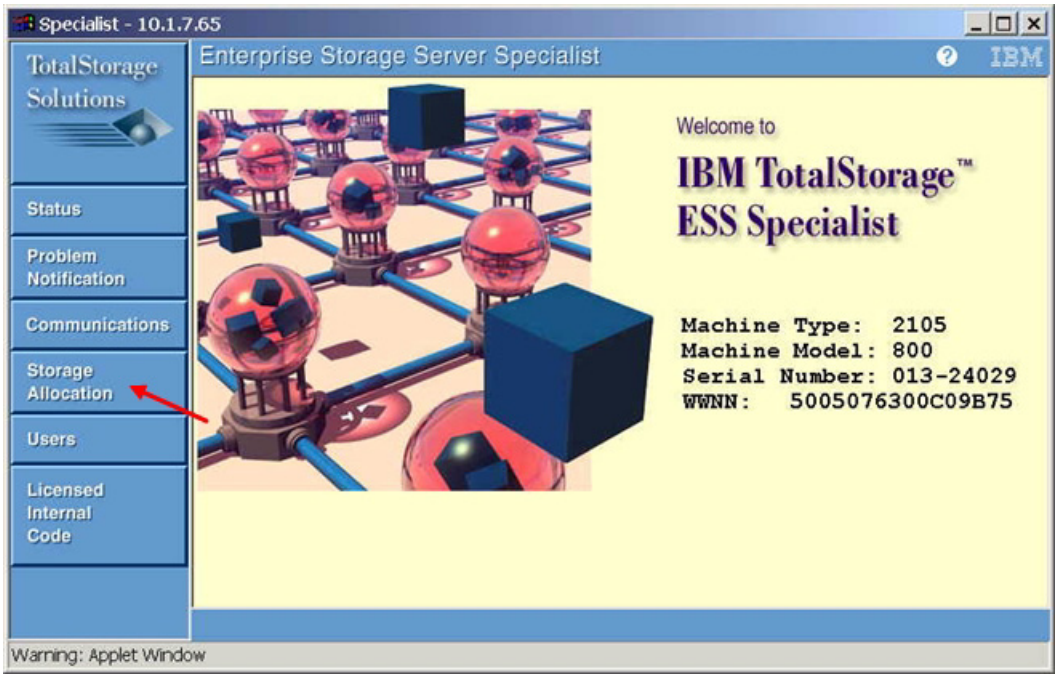
## Opening the ESS Specialist Management Application

1. Open Internet Explorer, enter the **IP address** of the ESS storage device in the address bar, and press **Enter**.
2. The IBM TotalStorage Solutions management application appears in the browser. Click **ESS Specialist**:

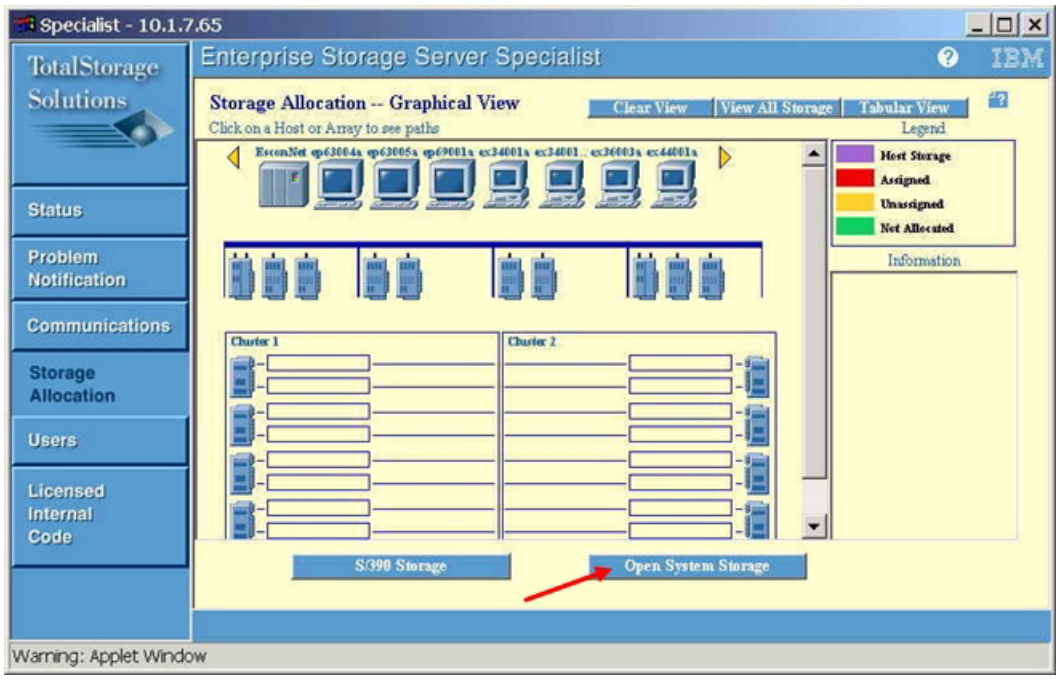

ESS Launch - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Links Search the Web with Lycos IBM Business Transformation IBM Internal Help IBM Standard Software Installer Customize Links
Address https://10.1.7.65/specialist
Go
TotalStorage Solutions
IBM
Welcome to
IBM TotalStorage™ Enterprise Storage Server™
ESS Specialist
Copy Services
Tools
Help
Do not close, resize, or reload this browser window while any ESS Specialist or Copy Services window is displayed and in use.
Internet

3. Enter the administrative **User Name** and **Password**:

4. From the ESS Specialist, click **Storage Allocation**:

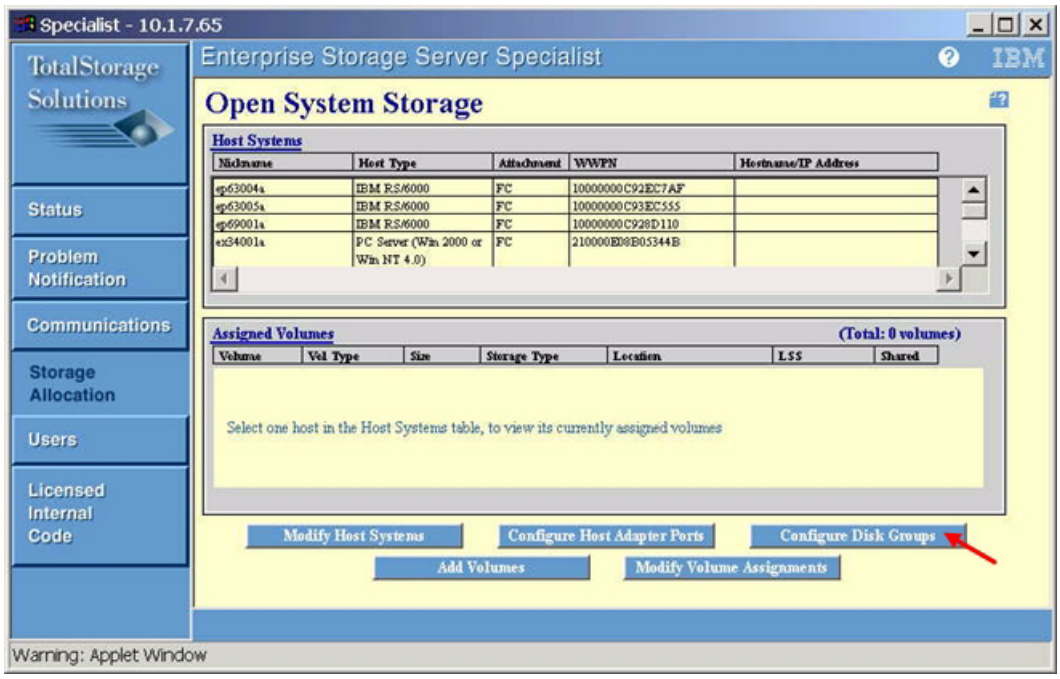


5. From the Storage Allocation window, click **Open System Storage**:

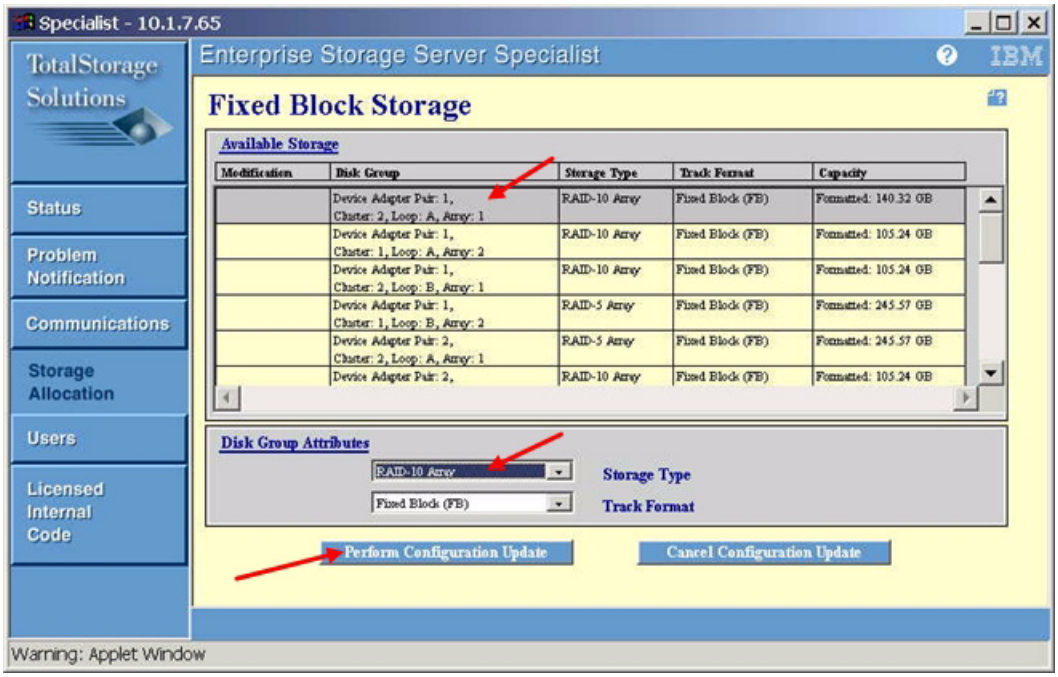


## Configuring Disk Groups

1. From the Open System Storage window, click **Configure Disk Groups**:

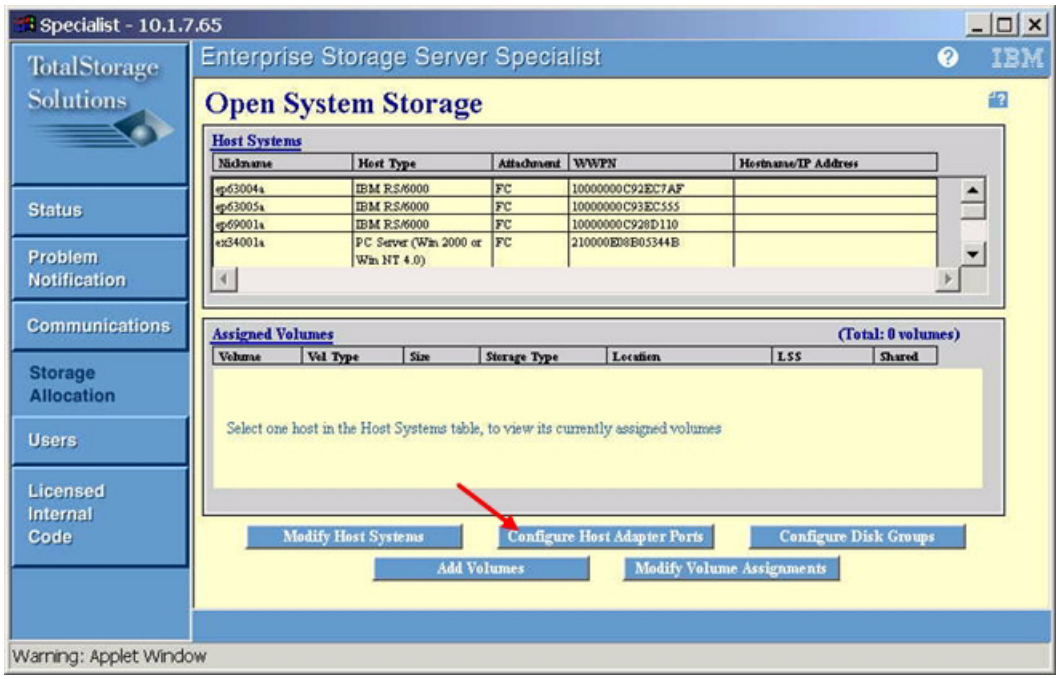


2. From the Fixed Block Storage window:
   a. Select the **Disk Group.**
   b. Select a **Storage Type** from the list.
   c. Click **Perform Configuration Update**.



## Configuring the Port Type

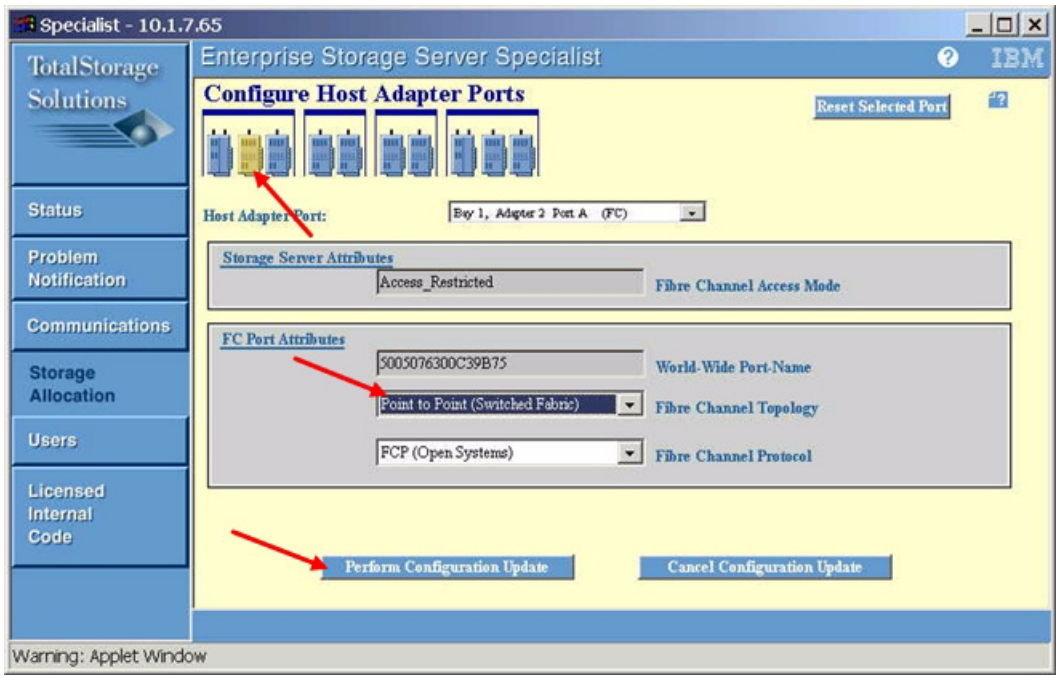
1. From the Open System Storage window, click **Configure Host Adapter Ports**:




2. To configure the ports:
   a. Click one of the adapter icons located at the top of the window.
   b. Select the Fibre Channel Topology (**Point to Point** or **Loop**).

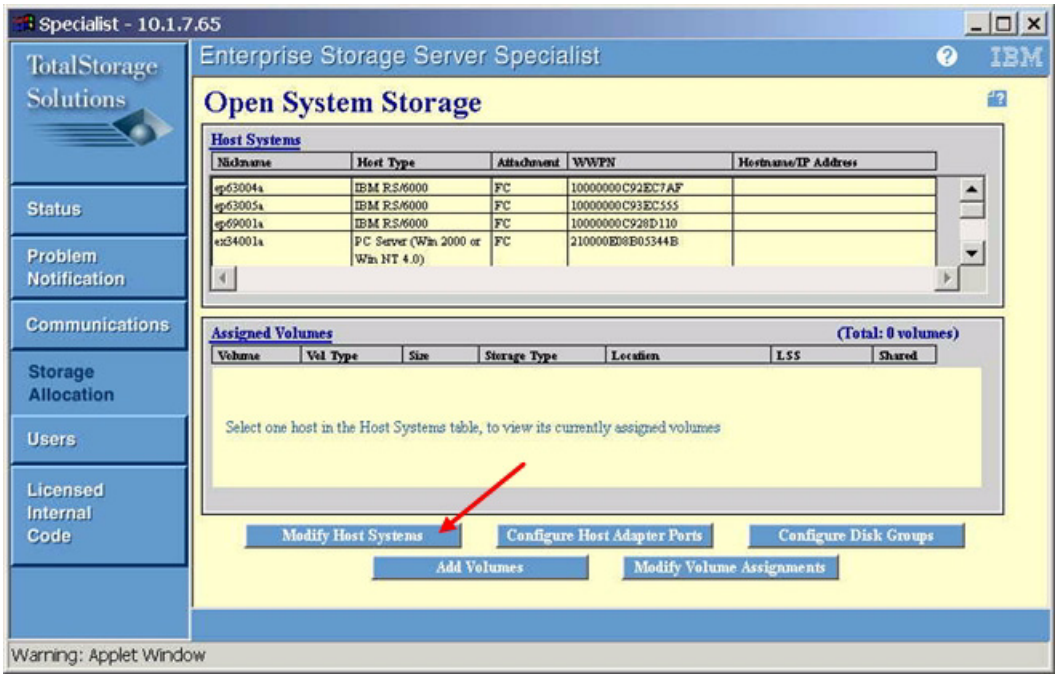
c. Set the Fibre Channel Protocol to **(FCP) Open Systems.**

d. Click **Perform Configuration Update**.



## Defining the Host System

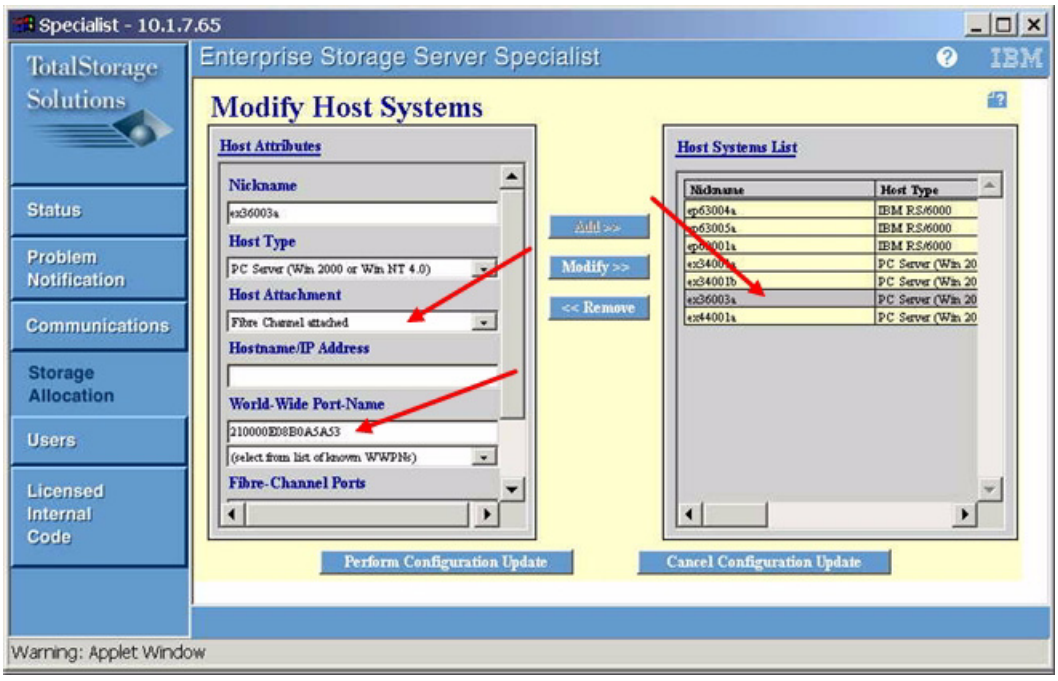
1. From the Open System Storage window, click **Modify Host Systems**:




2. In the Modify Host Systems window, you can enter new host information or modify information for an existing host:
   a. In the Host Attributes list, enter a **Nickname** for the host and select a **Host Type** from the list.
   b. From the Host Attachment list, select **Fibre Channel Attached** and select the host's **WWPN** from the World-Wide Port Name list.
   c. For the Fibre Channel Port, select the port configured in the previous section.

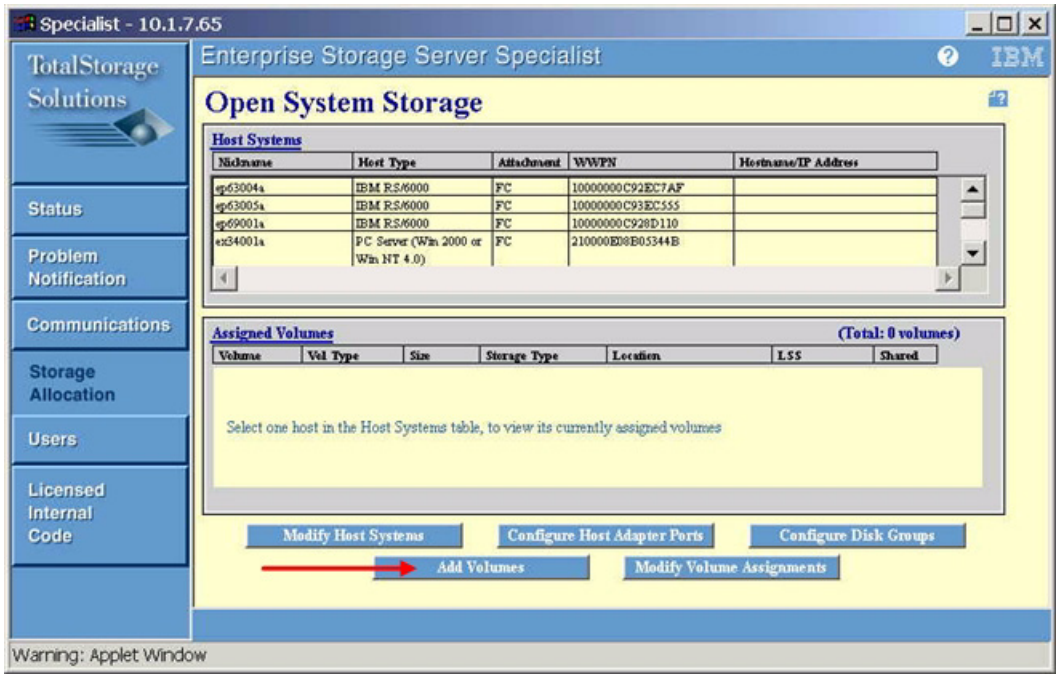
d. Click **Add** to add a new host to the list or click **Modify** to add an existing host.

e. Click **Perform Configuration Update**.



## Adding Volumes

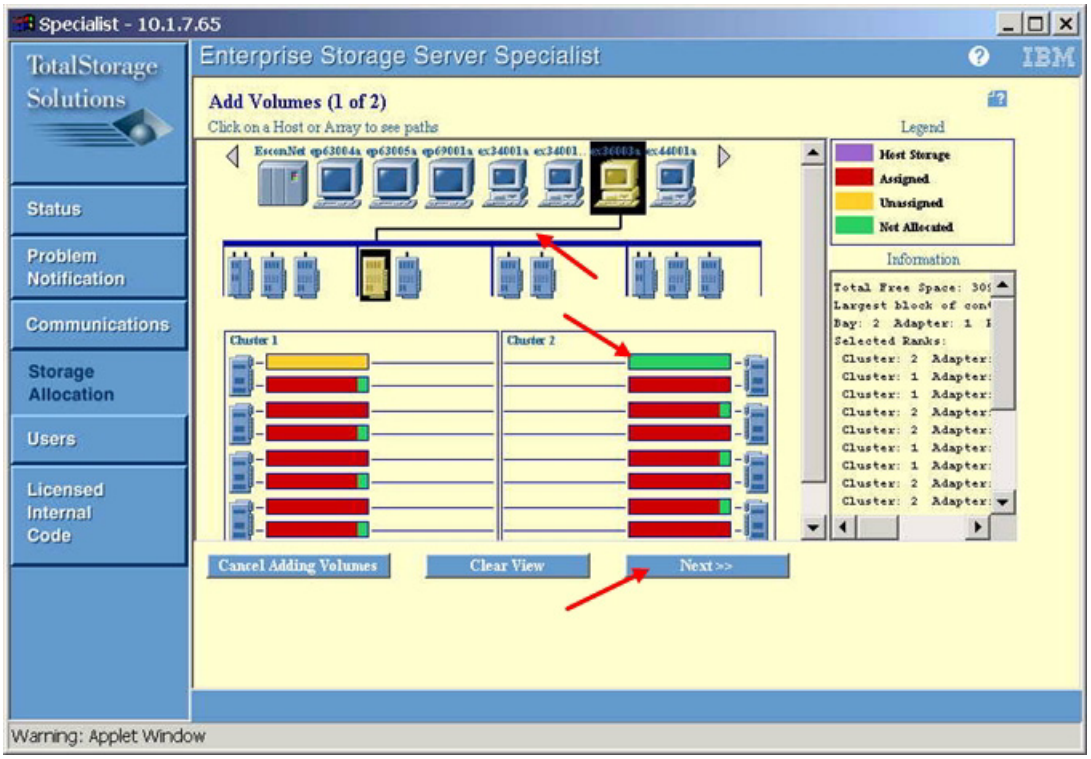
a. From the Open Storage System window, click **Add Volumes**:



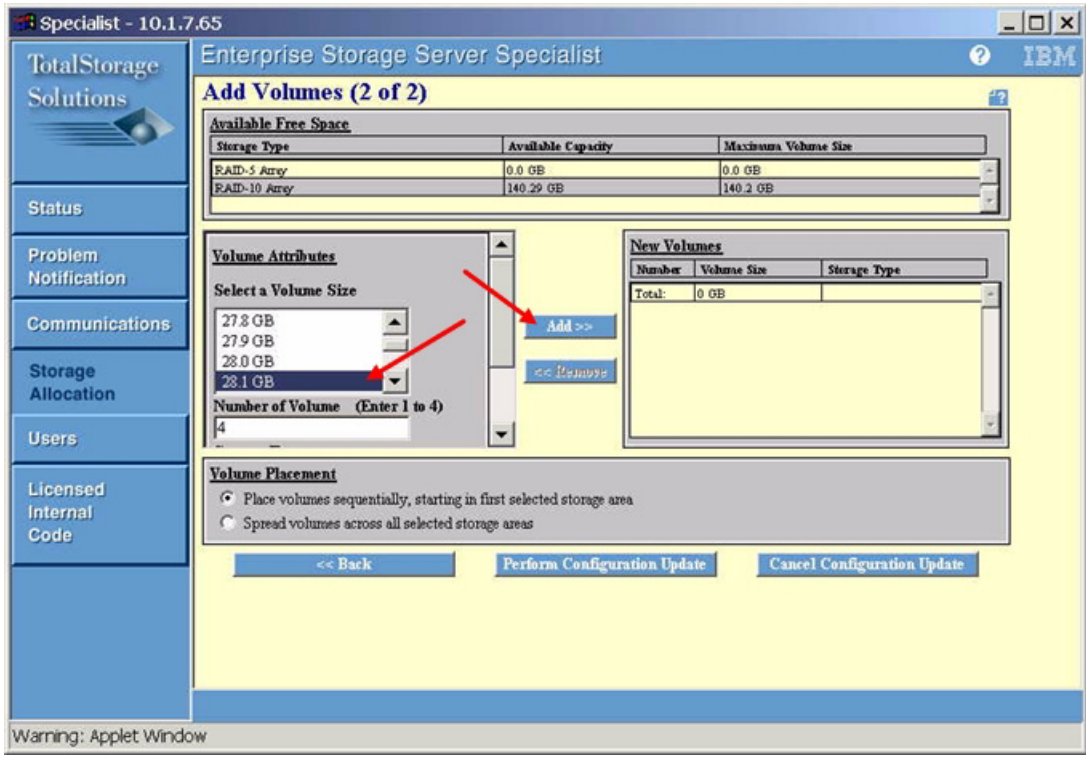

3. In the window, Add Volumes (1 of 2):
   a. Scroll through the list of hosts and select the host previously defined.
   b. Select the desired adapter. A path will appear between the host and adapter.

c. Select the desired non-allocated storage from the cluster you want. The legend in the upper right corner identifies assigned, unassigned, and not allocated storage.

d. Click **Next** when finished.

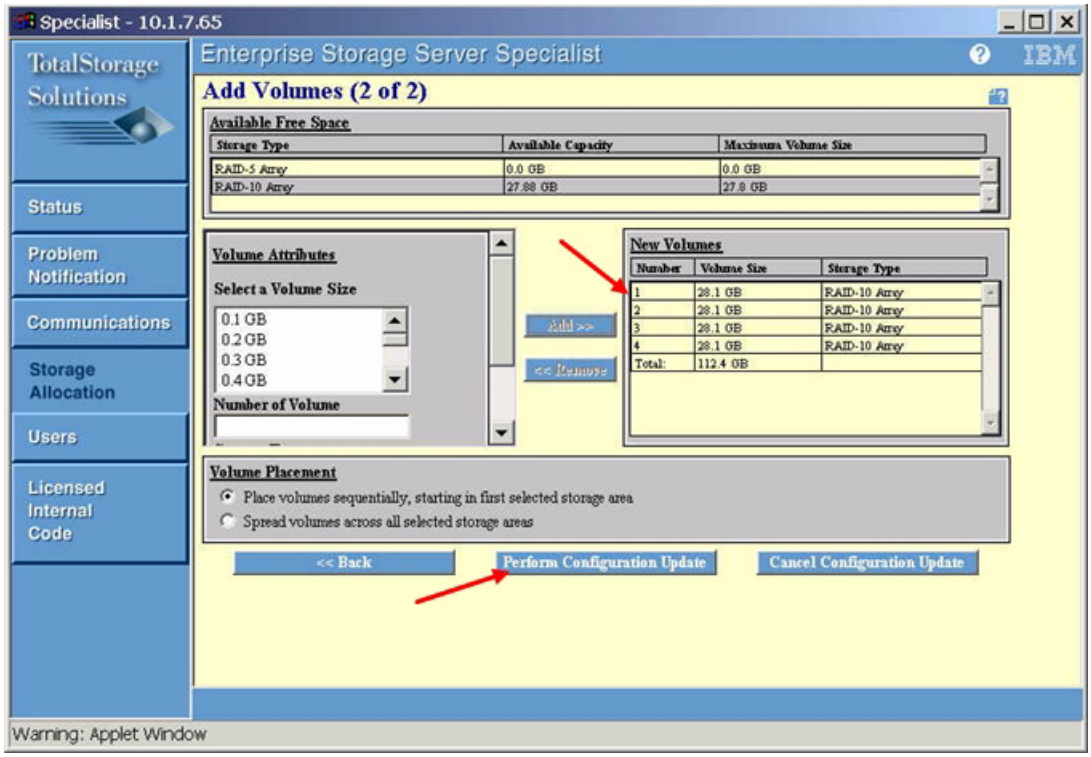


4. In the window, Add Volumes (2 of 2):
   a. Select the RAID you wish to use under **Available Free Space**.
   b. Select a volume size under **Volume Attributes**.
   c. Choose the number of Volumes you wish to create at that size under **Number of Volume** and click **Add**. After you click Add the volumes will be shown under the New Volume dialog.

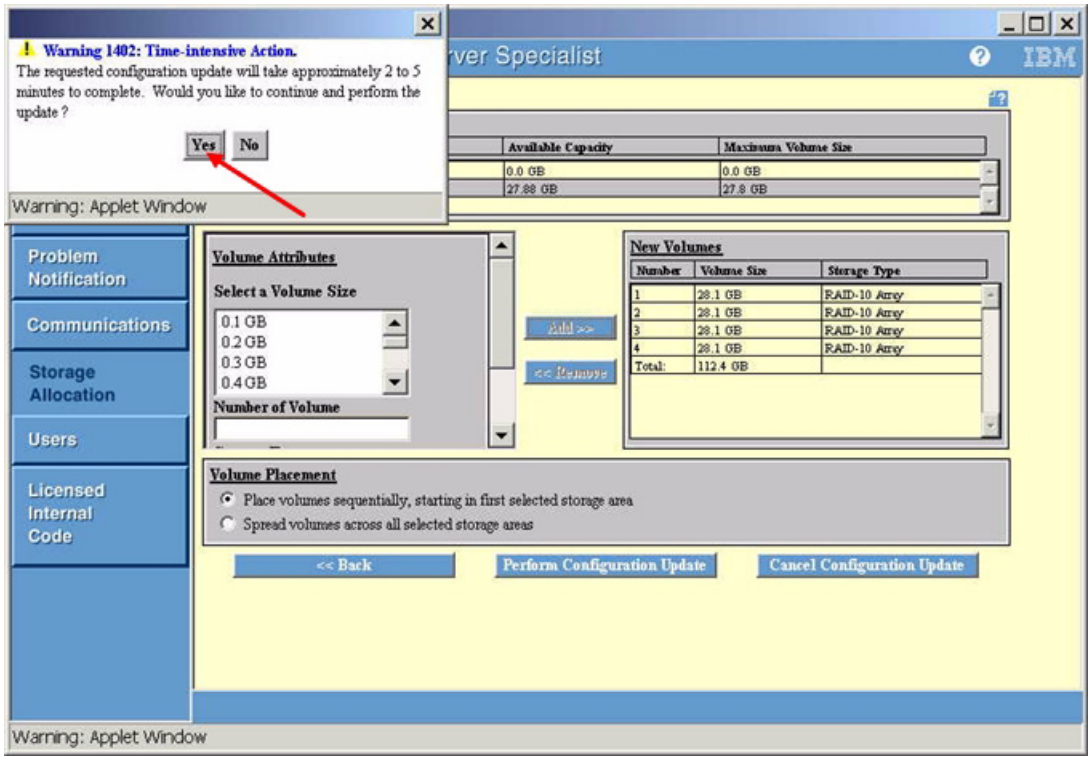


d. Choose a method for **Volume Placement**.

e. Click **Perform Configuration Update**.

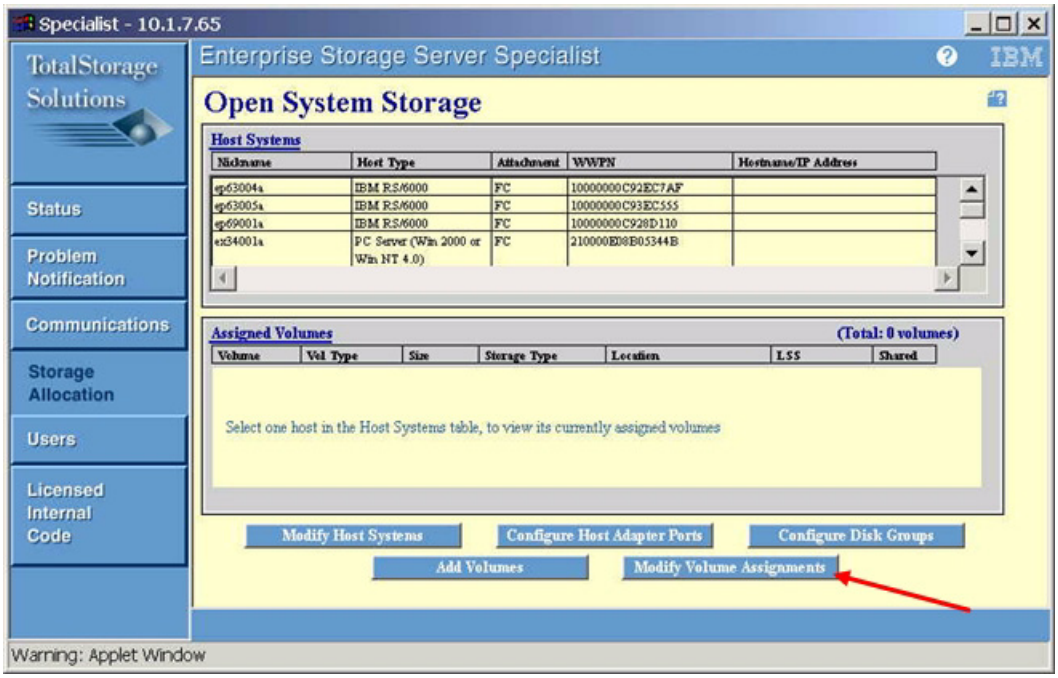


5. At the warning message, click **Yes** to confirm and wait for the update to complete.



## Changing Volume Assignments

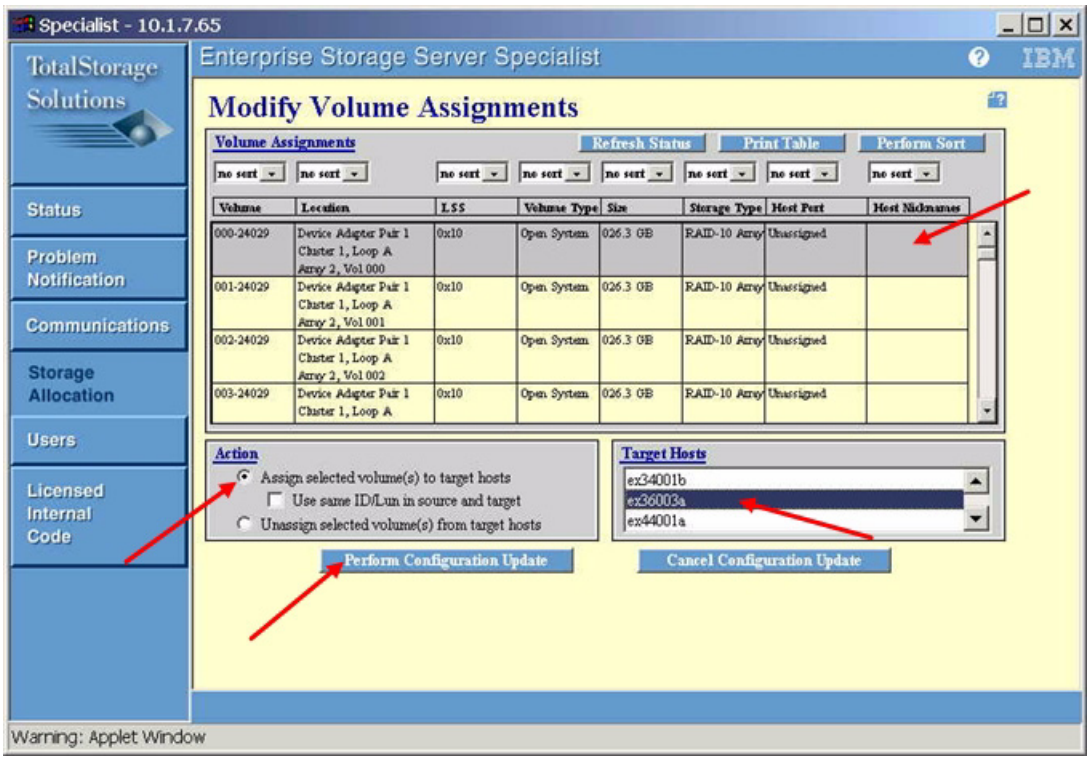
1. From the Open System Storage window, click **Modify Volume Assignments**:



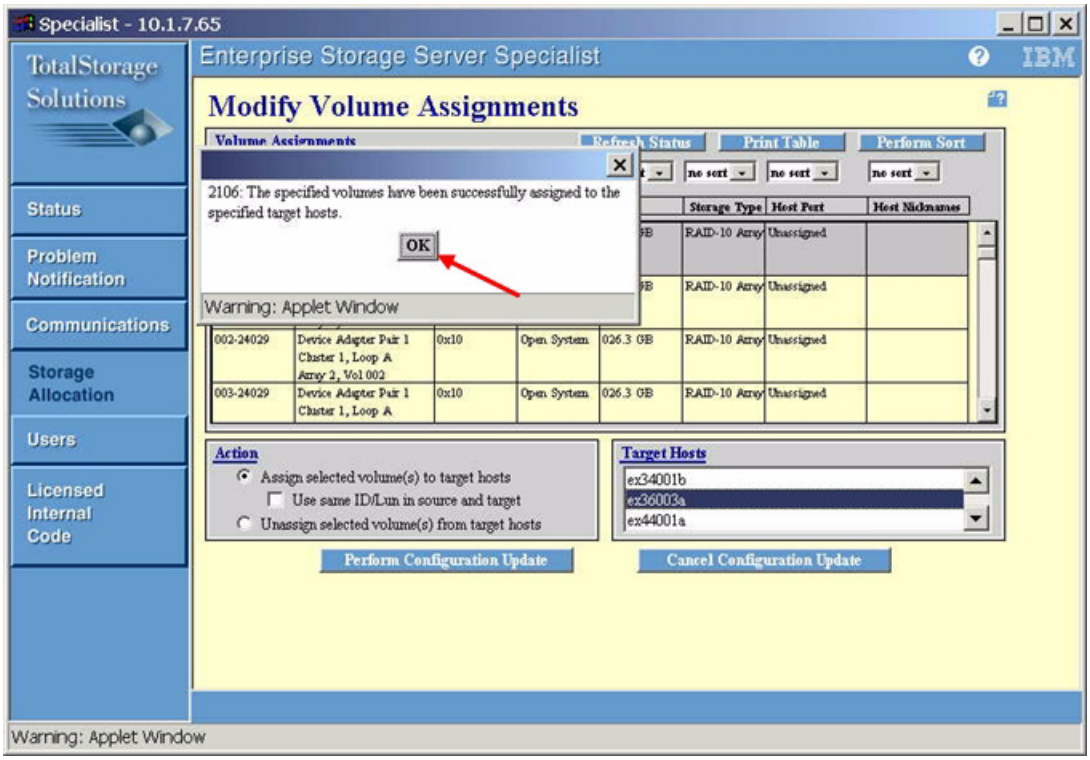

2. From the Modify Volume Assignments window.
   a. Select the volume you want to assign.
   b. Choose **Assign selected volume(s) to target hosts.**

c. Choose your target host under **Target Hosts**.

d. Click **Perform Configuration Update.**



3. At the confirmation message, click **OK**:




4. This step completes your configuration. Close the browser window to exit the ESS management application.

# FAStT Configuration

The configuration process for the FAStT storage server models is very similar. However, the FAStT 200 and FAStT 900 use different versions of the Storage Manager application.

Read the following sections to configure the FAStT:

- Assumptions
- Configuring the FAStT 900
- Configuring the FAStT 200

## Assumptions

The following FAStT configuration procedures assume that:

- You have configured the FAStT with an IP address and connected to the LAN.
- You have installed the FAStT Storage Manager application required by your FAStT model as instructed in the vendor documentation. For version information, refer to “Application Software / Appliances” on page 20.
- You have allocated storage space of suitable size for the application being used.
- Your disks are available to create a RAID group.
- Your storage system has an available port.

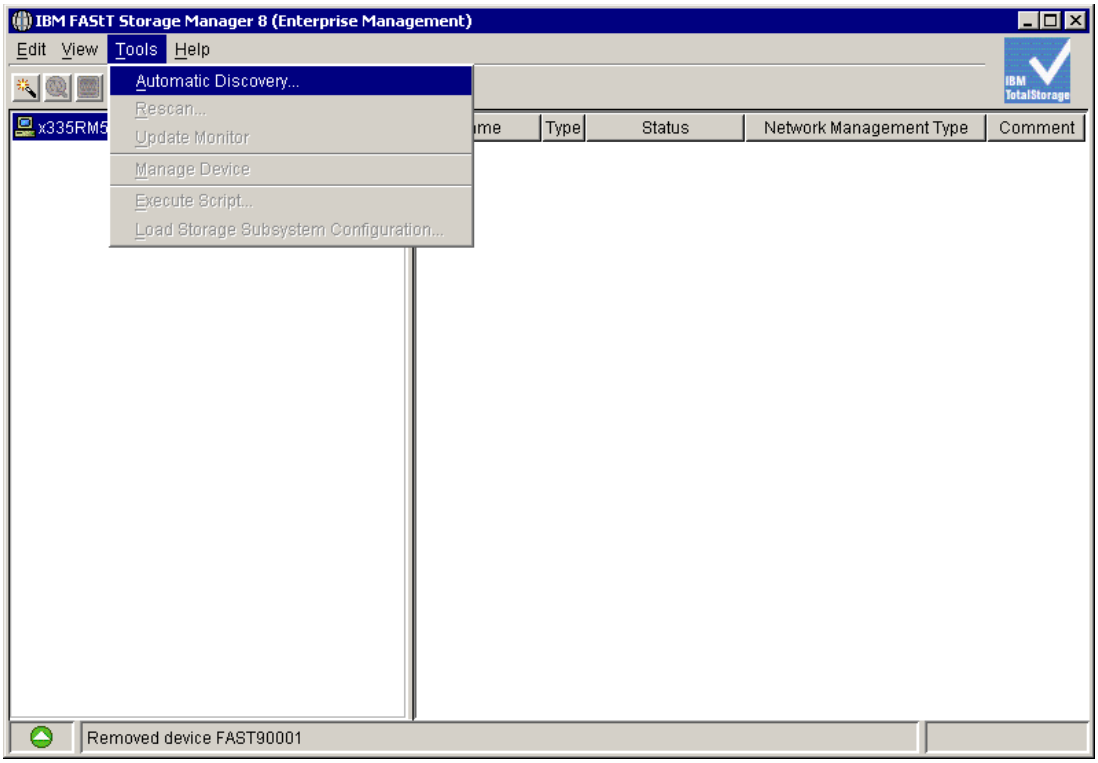
## Configuring the FAStT 900

Completing these steps will prepare the allocated FAStT storage for connection to the fabric:

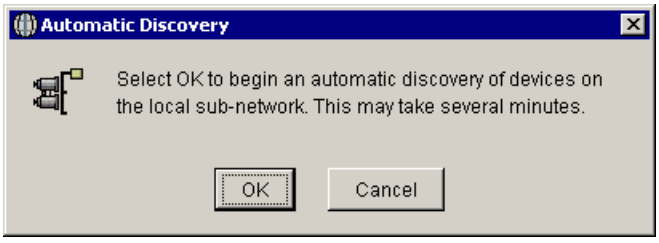
- Discovering FAStT 900 Devices
- Assigning Device Names
- Creating a RAID Group and Logical Drives
- Mapping Logical Drives to Hosts and Ports

## Discovering FAStT 900 Devices

1. Open the IBM FAStT Storage Manager Application.
2. From the Tools menu, select **Automatic Discovery** to discover your device(s):



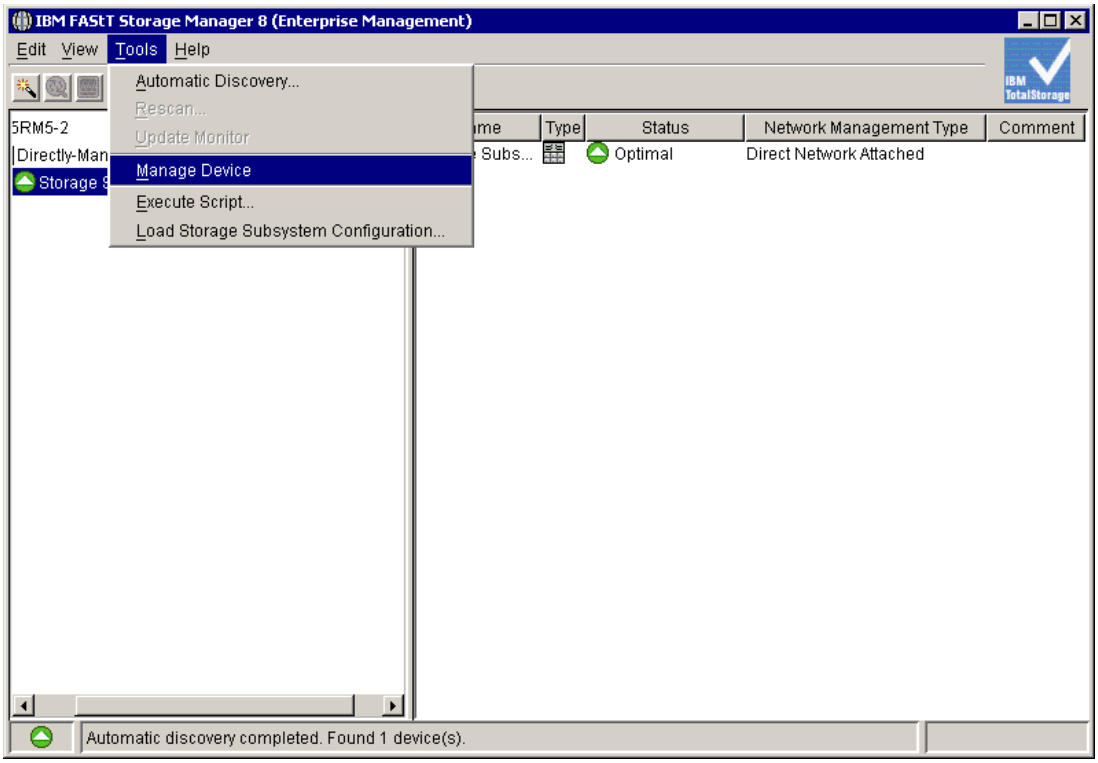

3. Select **OK** to begin automatic discovery, which may take several minutes:


Automatic Discovery
Select OK to begin an automatic discovery of devices on the local sub-network. This may take several minutes.
OK
Cancel

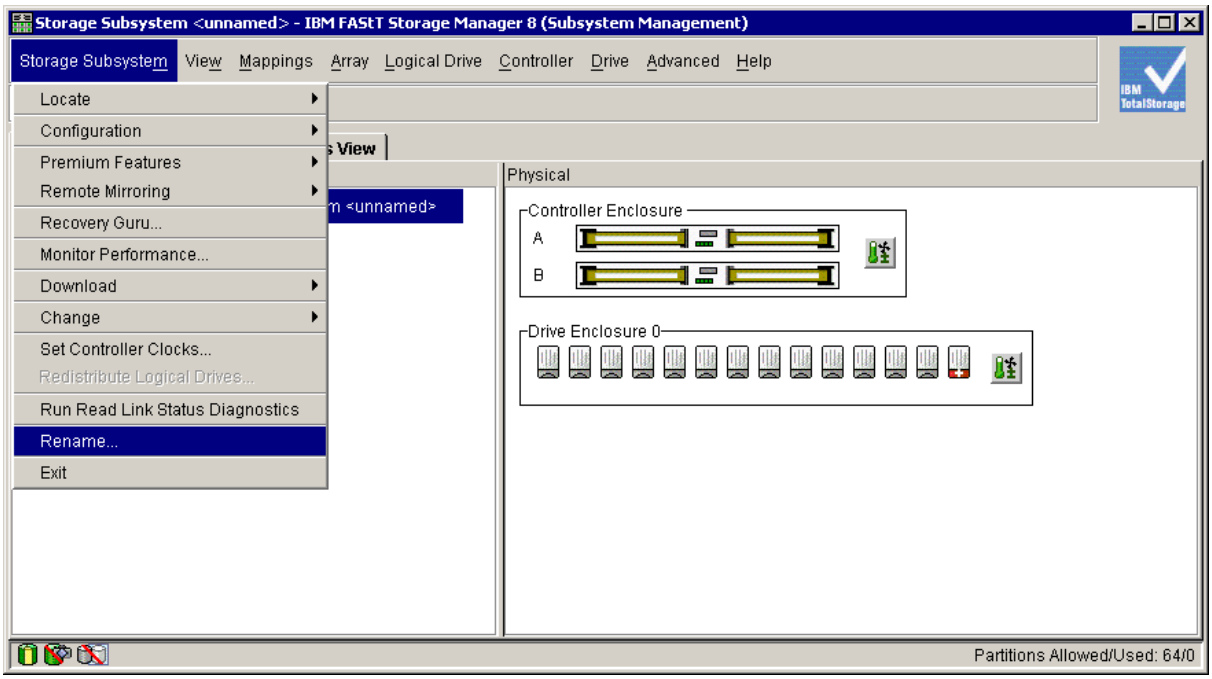
The device(s) appears in the list.

## Assigning Device Names

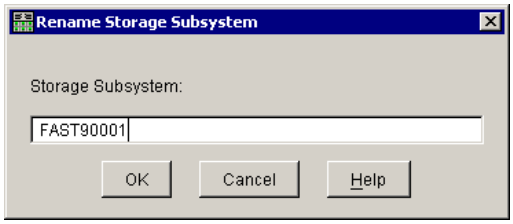
1. Select the FAStT storage subsystem.
2. From the **Tools** menu, click **Manage Device**.



3. From the **Storage Subsystem** menu, select **Rename**.

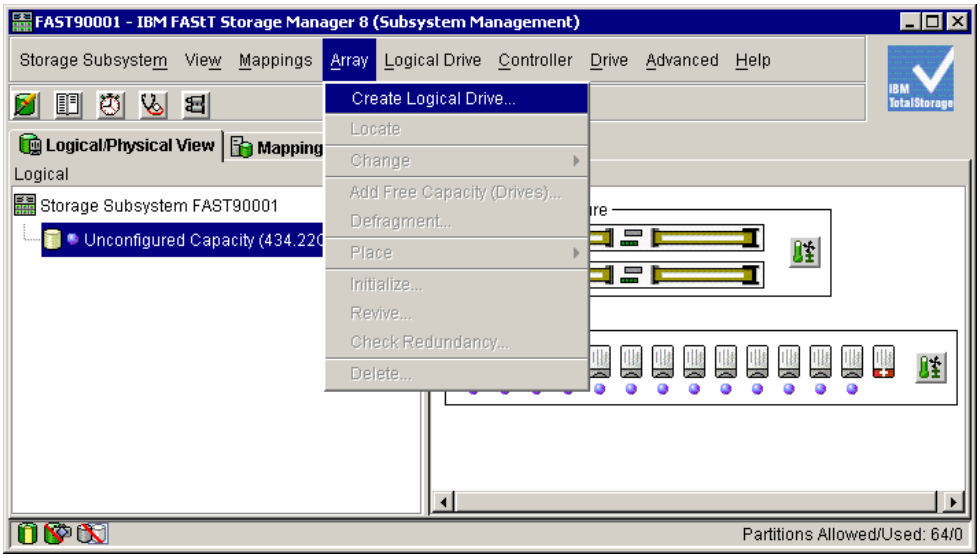



4. Enter a name for the Storage Subsystem and click **OK.**

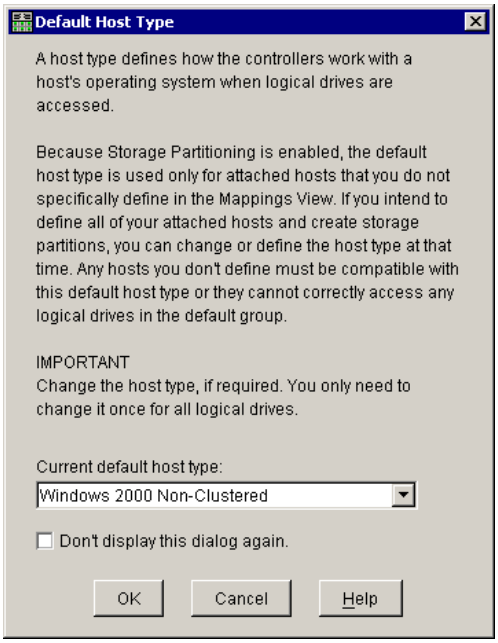


## Creating a RAID Group and Logical Drives

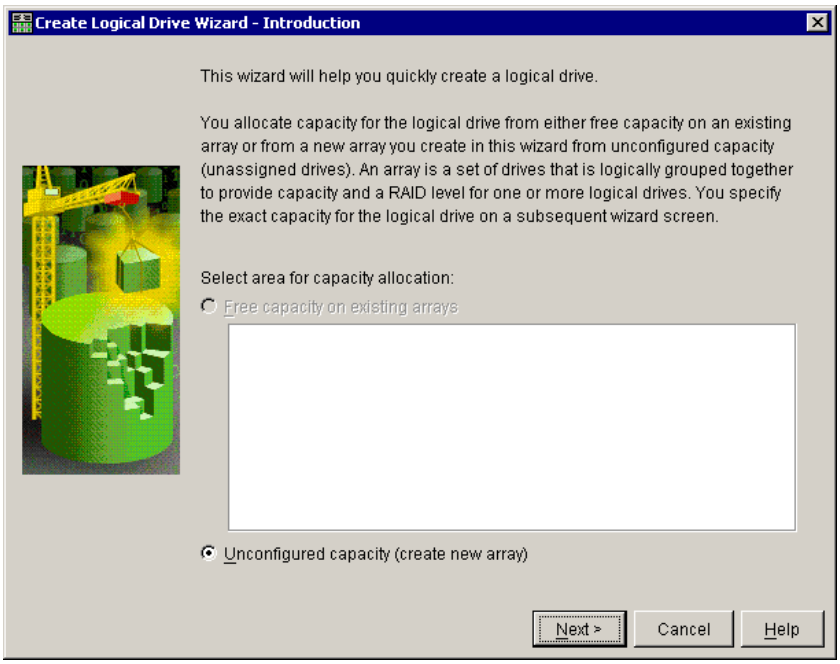
1. From the **Array** menu, select **Create Logic Drive**:




2. From the drop down menu, choose the default host type you are connecting to the RAID controllers:


Default Host Type
A host type defines how the controllers work with a host's operating system when logical drives are accessed.
Because Storage Partitioning is enabled, the default host type is used only for attached hosts that you do not specifically define in the Mappings View. If you intend to define all of your attached hosts and create storage partitions, you can change or define the host type at that time. Any hosts you don't define must be compatible with this default host type or they cannot correctly access any logical drives in the default group.
IMPORTANT
Change the host type, if required. You only need to change it once for all logical drives.
Current default host type:
Windows 2000 Non-Clustered
Don't display this dialog again.
OK
Cancel
Help

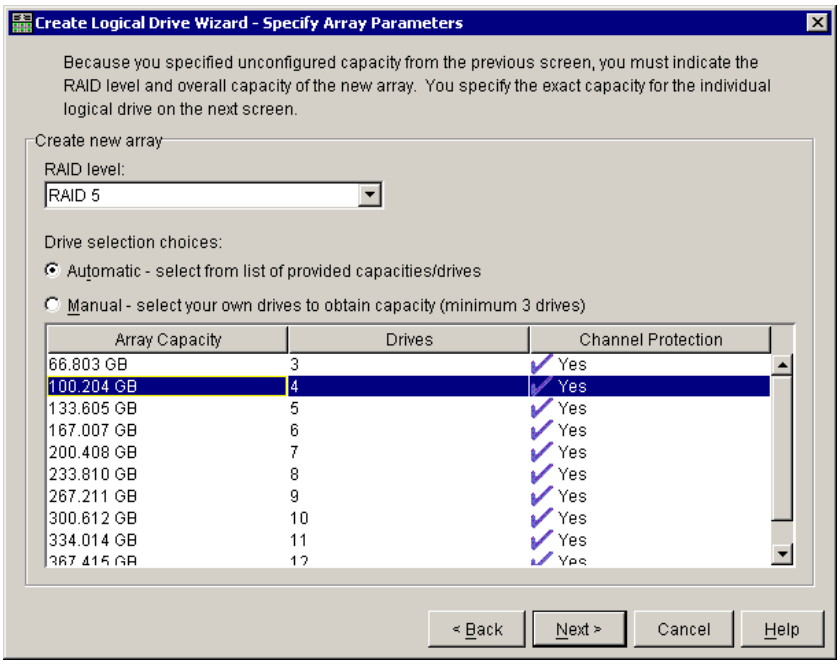
3. From the **Create Logical Drive Wizard – Introduction** window, click **Next**.


Create Logical Drive Wizard - Introduction
This wizard will help you quickly create a logical drive.
You allocate capacity for the logical drive from either free capacity on an existing array or from a new array you create in this wizard from unconfigured capacity (unassigned drives). An array is a set of drives that is logically grouped together to provide capacity and a RAID level for one or more logical drives. You specify the exact capacity for the logical drive on a subsequent wizard screen.
Select area for capacity allocation:
Free capacity on existing arrays
Unconfigured capacity (create new array)
Next >
Cancel
Help

4. From the Specify Array Parameters window:
   a. Select a **RAID level** to configure from the drop-down list.
   b. Select **Automatic** in the Drive selection choices.

c. Select your array capacity from the options listed.

d. Click **Next**.


Create Logical Drive Wizard - Specify Array Parameters
Because you specified unconfigured capacity from the previous screen, you must indicate the RAID level and overall capacity of the new array. You specify the exact capacity for the individual logical drive on the next screen.
Create new array
RAID level:
RAID 5
Drive selection choices:
Automatic - select from list of provided capacities/drives
Manual - select your own drives to obtain capacity (minimum 3 drives)
Array Capacity
Drives
Channel Protection
66.803 GB 3 Yes
100.204 GB 4 Yes
133.605 GB 5 Yes
167.007 GB 6 Yes
200.408 GB 7 Yes
233.810 GB 8 Yes
267.211 GB 9 Yes
300.612 GB 10 Yes
334.014 GB 11 Yes
< Back
Next >
Cancel
Help

***NOTE:*** This example uses the option to configure drives automatically. To manually configure your drives, refer to the FAStT 900 product manuals for more information.

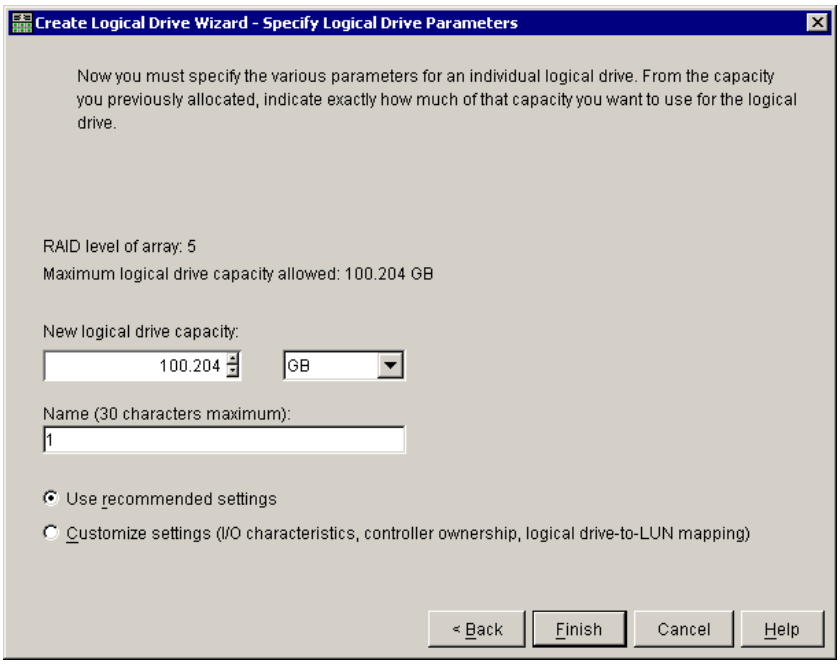
5. From the window, Specify Logical Drive Parameters:

   a. Choose a logical drive capacity that equals all or part of the array.

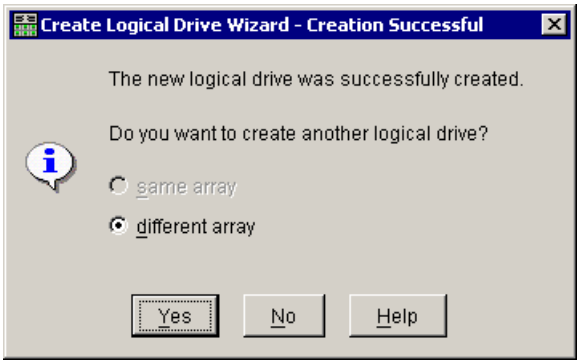
   b. Enter a Name for the logical drive.

c. Choose **Use recommended settings**.

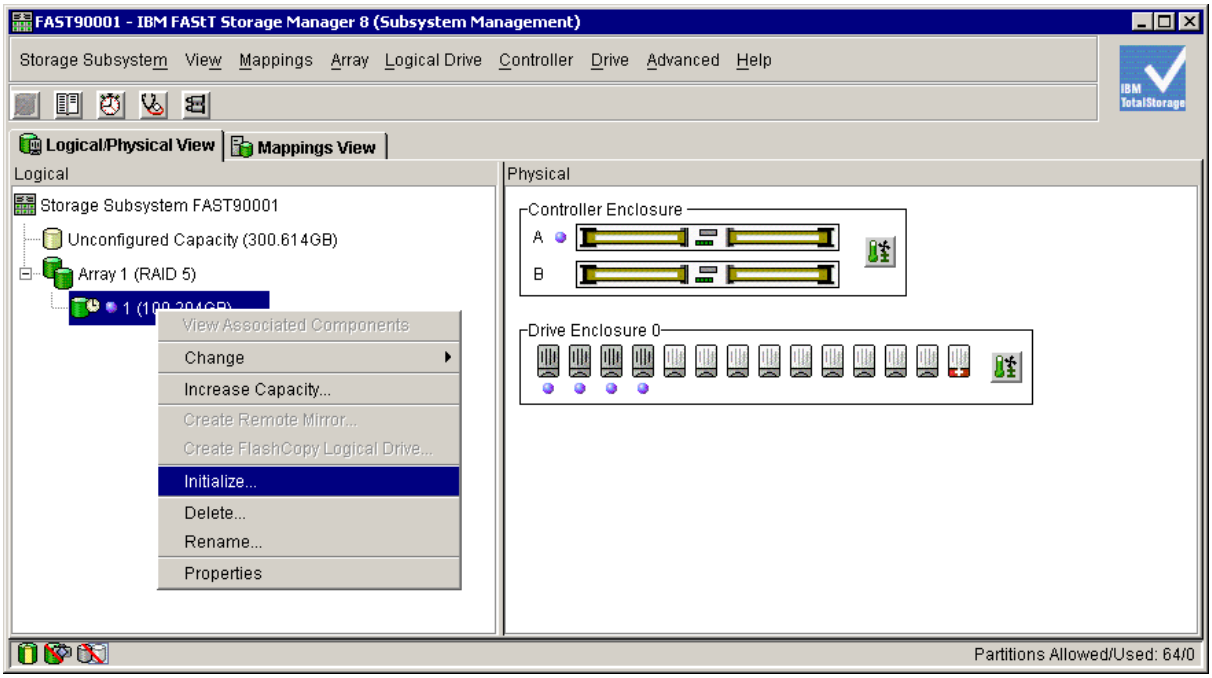
d. Click **Finish**.


Create Logical Drive Wizard - Specify Logical Drive Parameters
Now you must specify the various parameters for an individual logical drive. From the capacity you previously allocated, indicate exactly how much of that capacity you want to use for the logical drive.
RAID level of array: 5
Maximum logical drive capacity allowed: 100.204 GB
New logical drive capacity:
100.204
GB
Name (30 characters maximum):
1
Use recommended settings
Customize settings (I/O characteristics, controller ownership, logical drive-to-LUN mapping)
< Back
Finish
Cancel
Help

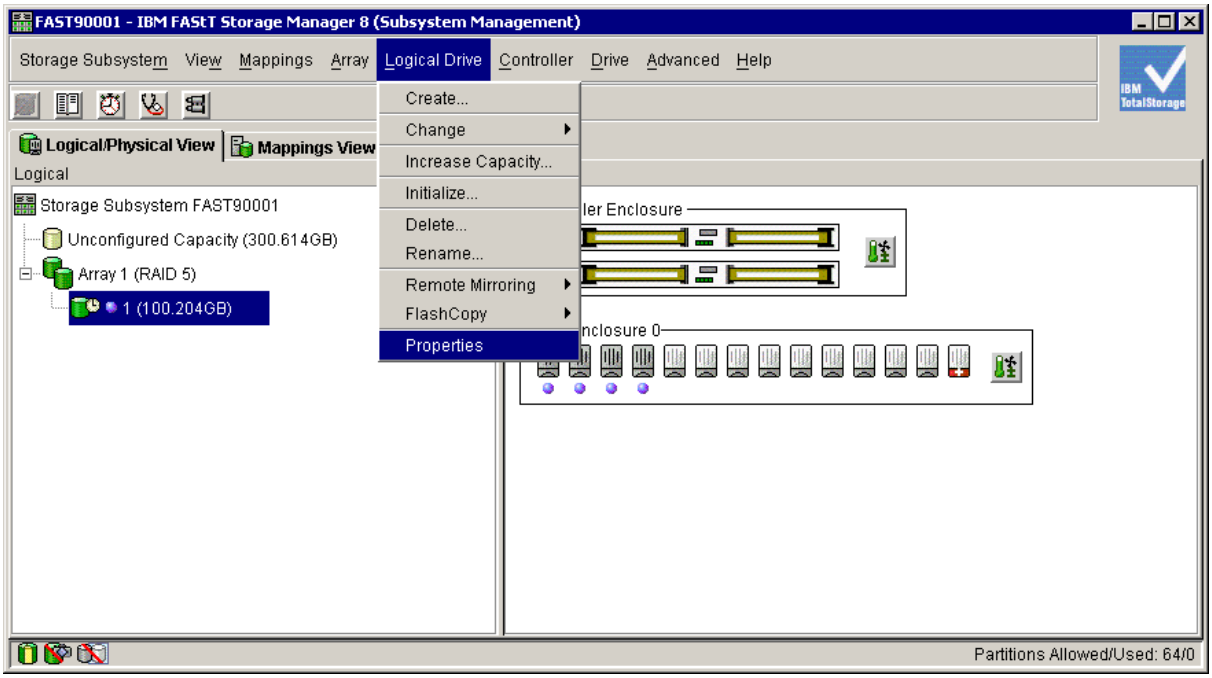
6. Click **Yes** if you wish to create another array or **No** to exit:



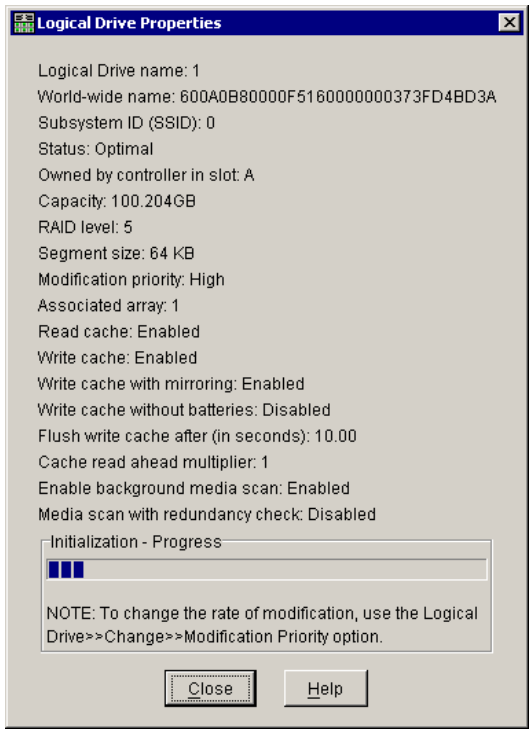
7. If the new array does not begin initializing automatically, right click on the array and click **Initialize** from the menu:



8. To view the progress of the initialization process, highlight the array and select **Properties** from the **Logical Drive** menu:



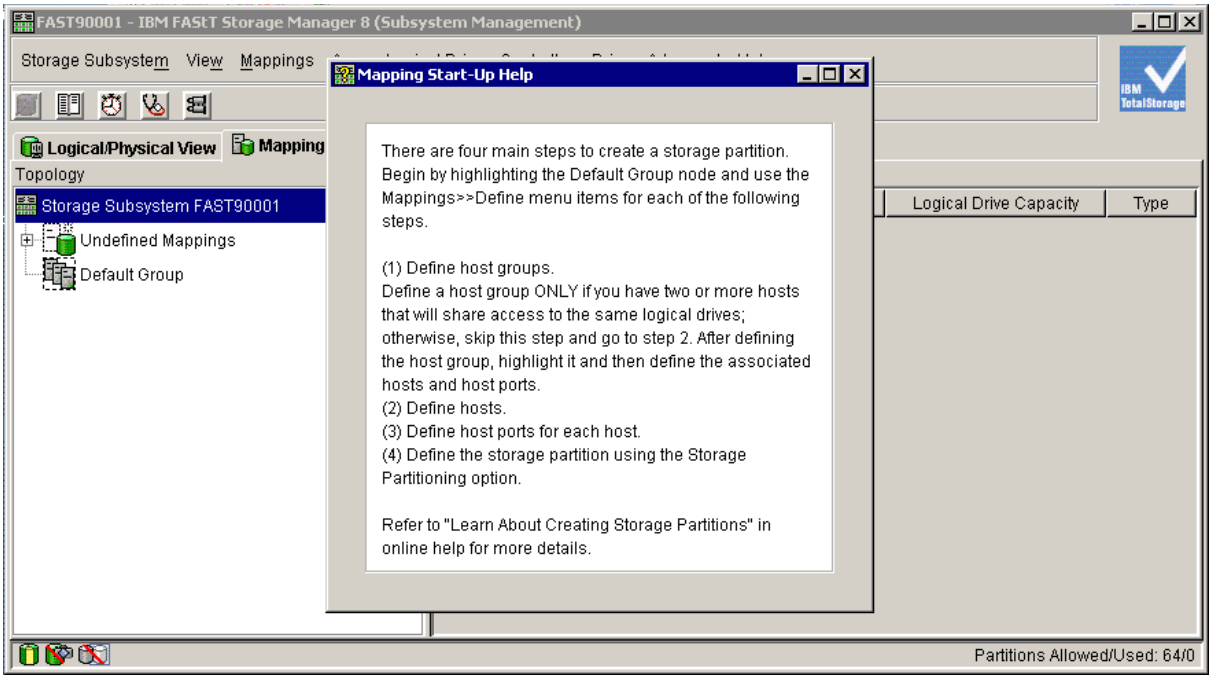
9. The initialization progress bar indicates the time remaining:


Logical Drive Properties
Logical Drive name: 1
World-wide name: 600A0B80000F5160000000373FD4BD3A
Subsystem ID (SSID): 0
Status: Optimal
Owned by controller in slot: A
Capacity: 100.204GB
RAID level: 5
Segment size: 64 KB
Modification priority: High
Associated array: 1
Read cache: Enabled
Write cache: Enabled
Write cache with mirroring: Enabled
Write cache without batteries: Disabled
Flush write cache after (in seconds): 10.00
Cache read ahead multiplier: 1
Enable background media scan: Enabled
Media scan with redundancy check: Disabled
Initialization - Progress
NOTE: To change the rate of modification, use the Logical Drive>>Change>>Modification Priority option.
Close
Help

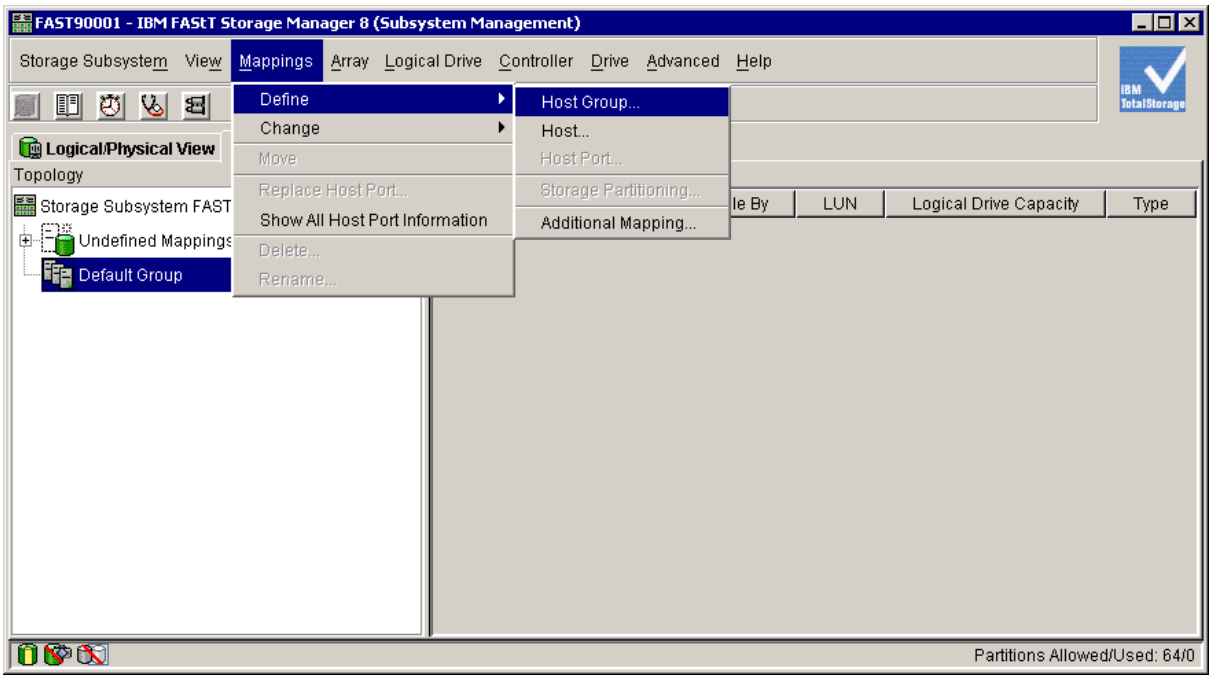
10. Click **Close** to exit.

## Mapping Logical Drives to Hosts and Ports

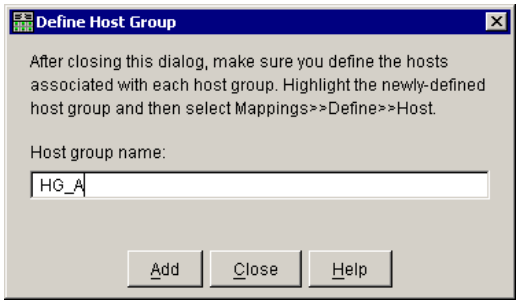
1. From the Storage Manager, click the **Mapping** tab.
2. If no mapping was previously defined, a help window appears. Close the window to continue:


FAST90001 - IBM FAStT Storage Manager 8 (Subsystem Management)
Storage Subsystem View Mappings
Mapping Start-Up Help
There are four main steps to create a storage partition. Begin by highlighting the Default Group node and use the Mappings>>Define menu items for each of the following steps.
(1) Define host groups.
Define a host group ONLY if you have two or more hosts that will share access to the same logical drives; otherwise, skip this step and go to step 2. After defining the host group, highlight it and then define the associated hosts and host ports.
(2) Define hosts.
(3) Define host ports for each host.
(4) Define the storage partition using the Storage Partitioning option.
Refer to "Learn About Creating Storage Partitions" in online help for more details.
Logical/Physical View
Mapping
Topology
Storage Subsystem FAST90001
Undefined Mappings
Default Group
Logical Drive Capacity
Type
Partitions Allowed/Used: 64/0

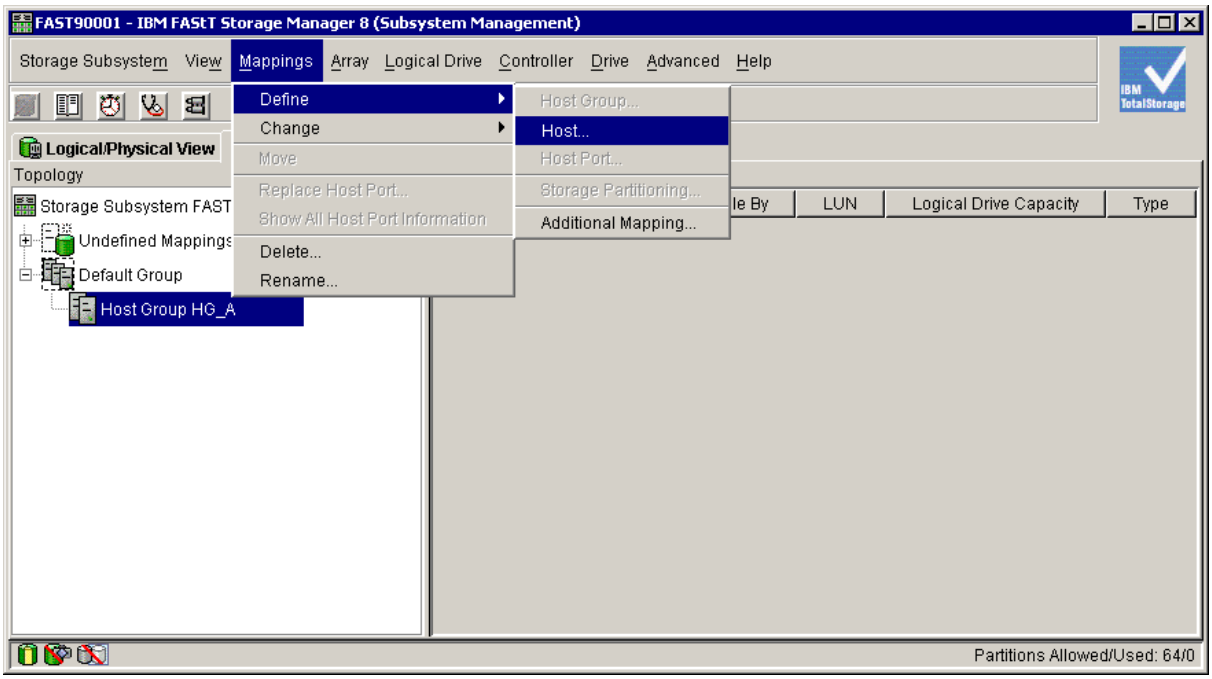
3. From the **Mappings** menu, select **Define-Host Group**:



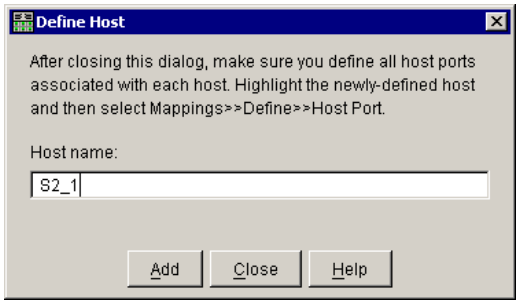

4. Enter a Host group name and click **Add**:


Define Host Group
After closing this dialog, make sure you define the hosts associated with each host group. Highlight the newly-defined host group and then select Mappings>>Define>>Host.
Host group name:
HG_A
Add
Close
Help

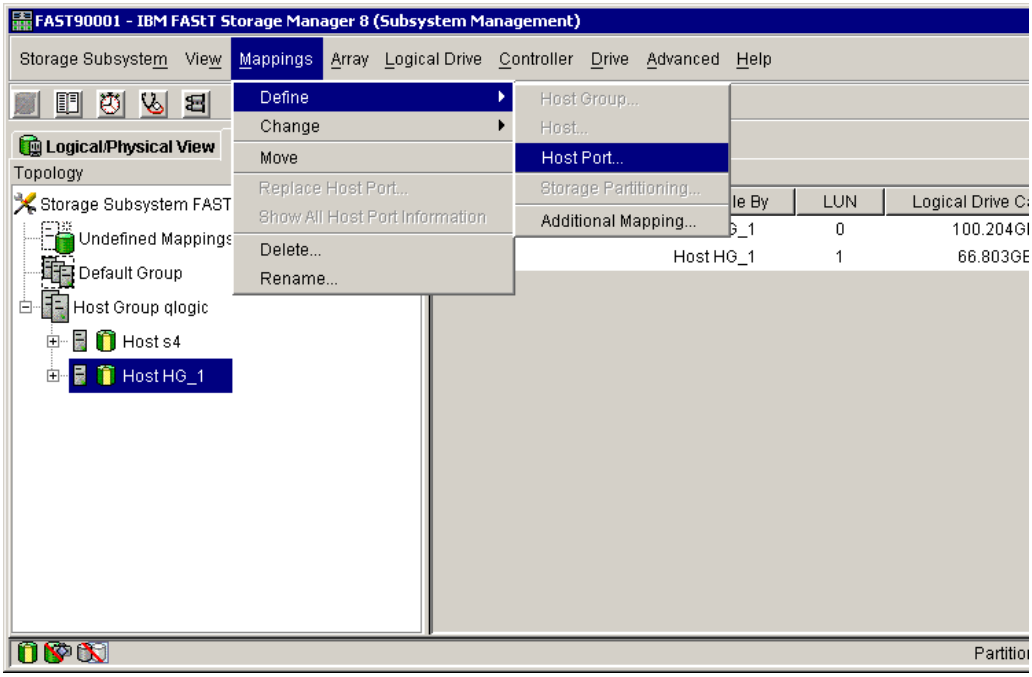
5. Highlight the Host Group you just created and select **Define-Host** from the **Mappings** menu:




6. Add a Host name to which you will map the logical unit:


Define Host
After closing this dialog, make sure you define all host ports associated with each host. Highlight the newly-defined host and then select Mappings>>Define>>Host Port.
Host name:
S2_1
Add
Close
Help

7. From the **Mappings** menu, select **Define-Host Port**:

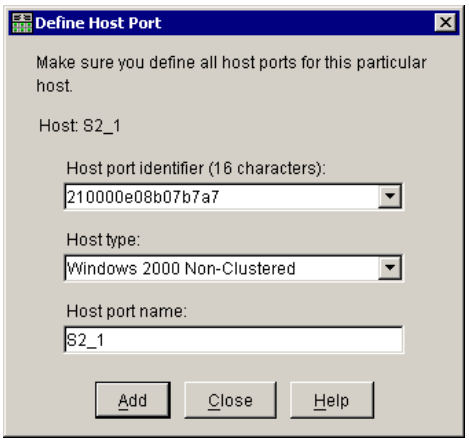



8. In the Define Host Port dialog:

   a. Select the correct WWPN from the Host port identifier drop-down list.

   *NOTE:* Only initiators connected to the controller appear in the list. If the initiator is not connected, manually enter the WWPN.

   b. Select a **Host type** from the list.

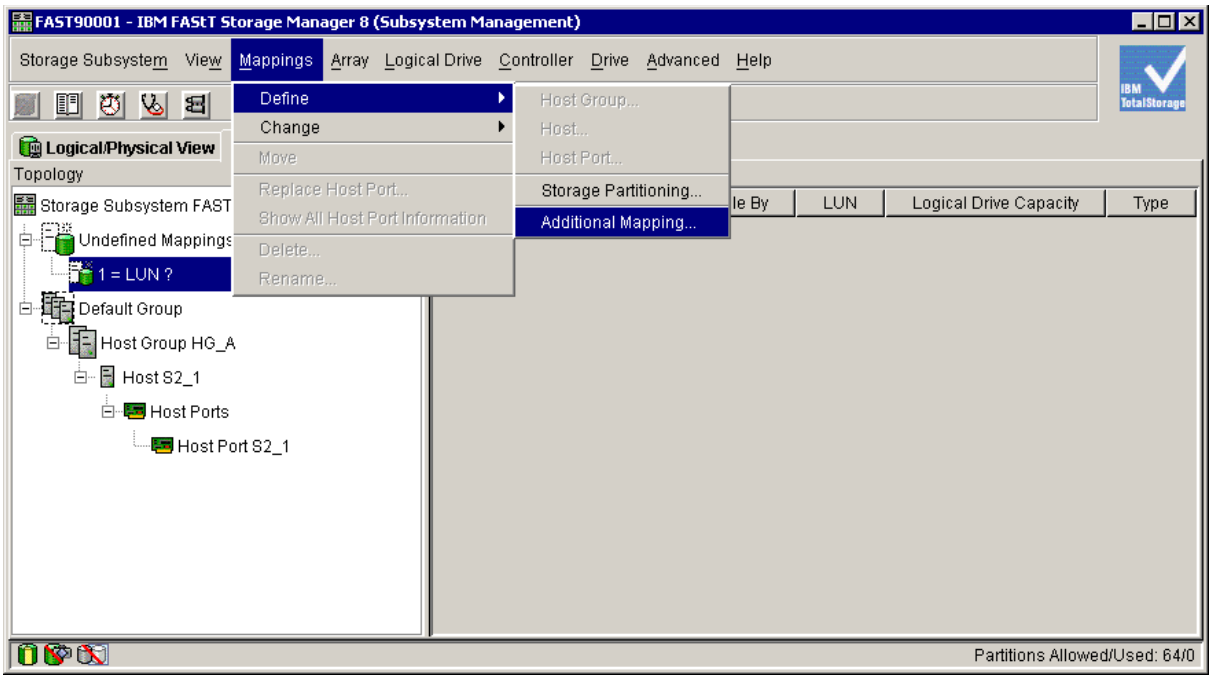


c. Enter the Host port name.

d. Click **Add**.

9. Select the desired LUN from the **Undefined Mappings** tree.

10. From the **Mappings** menu, select **Define/Additional Mapping**:



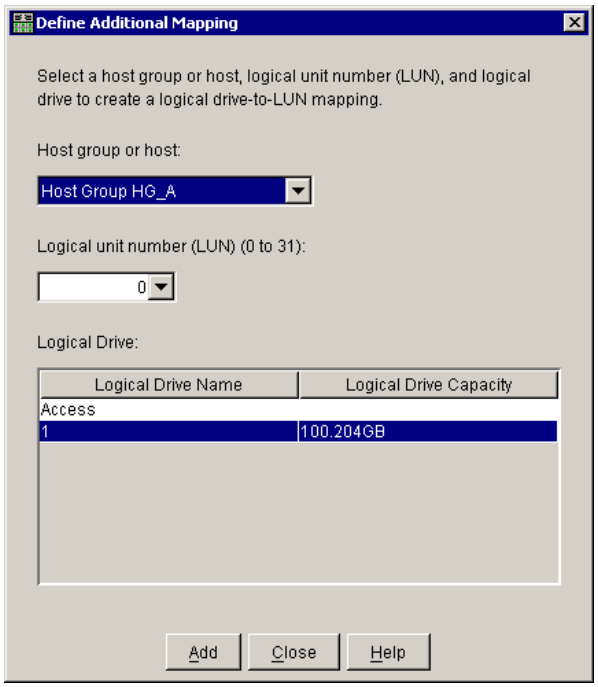

11. From the Define Additional Mapping dialog:

a. Select the Host group or host from the list.

b. Select the LUN you to which you are mapping the logical drive.

c. Select the appropriate logical drive from the list.

d. Click **Add**.




12. After the initialization process completes, verify that the logical drive/LUN is present on the host.

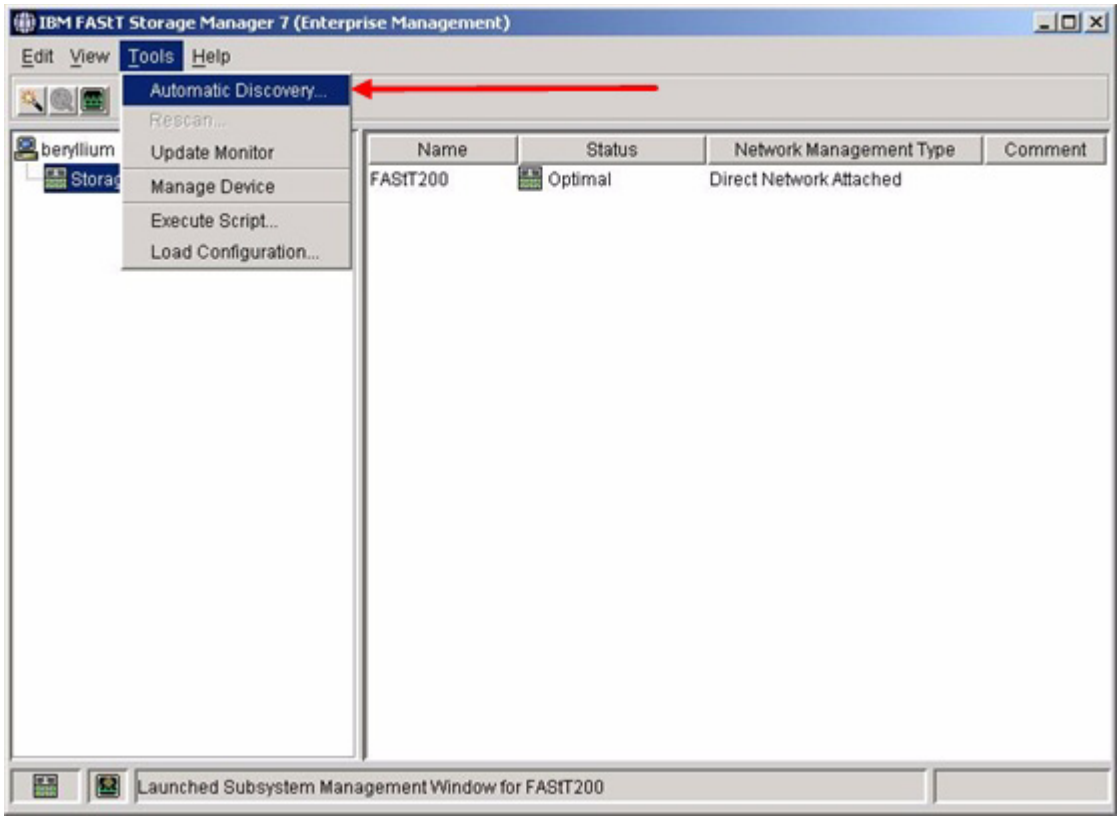
## Configuring the FAStT 200

Completing these steps will prepare the allocated FAStT 200 storage for connection to the fabric:

- Discovering FAStT 200 Devices
- Assigning a Device Name
- Creating a RAID Group and Logic Drives

### Discovering FAStT 200 Devices

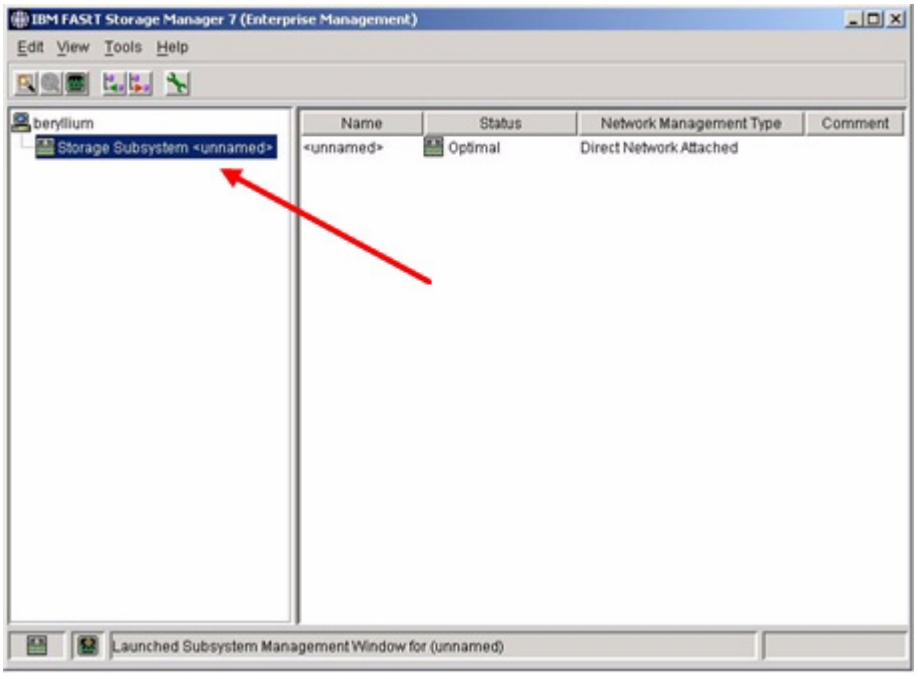
1. From the Storage Manager (Enterprise Management) window, select **Automatic Discovery** from the Tools menu:



2. Click **OK** to begin the automatic discovery process:

Automatic Discovery
Select OK to begin an automatic discovery of hosts and Storage Subsystems on the local sub-network. This may take several minutes.
OK
Cancel

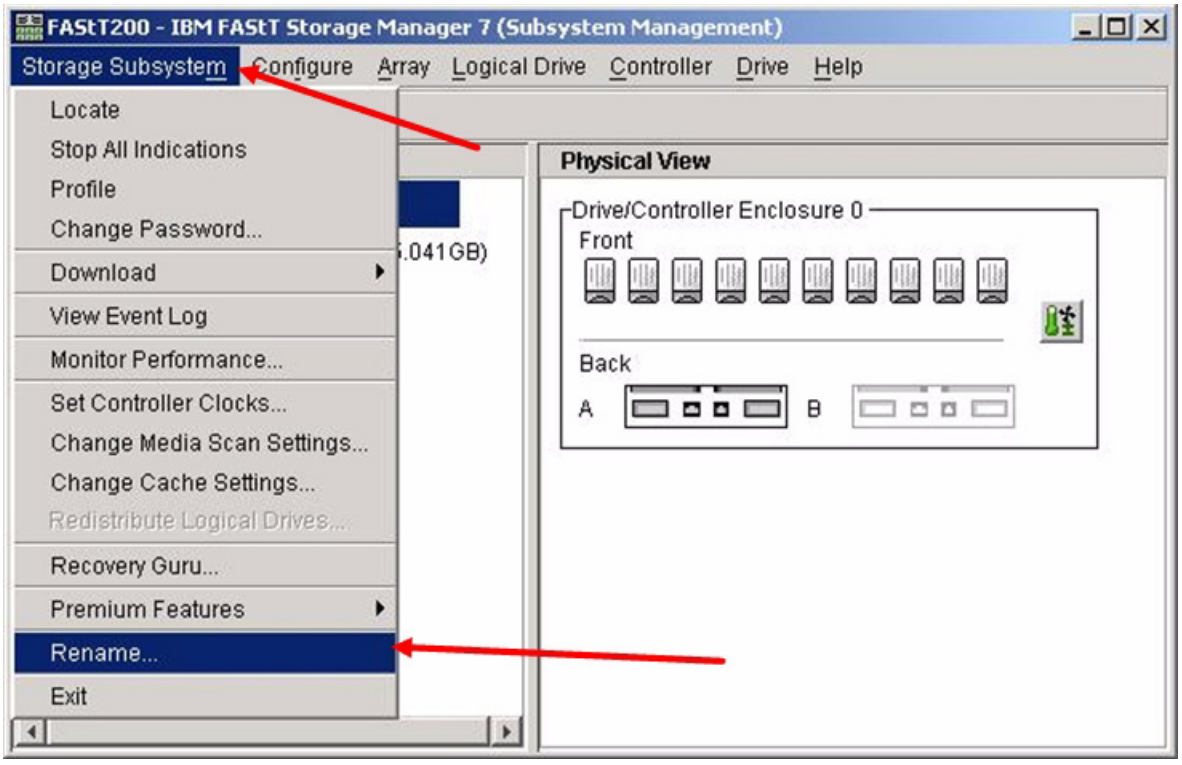
3. After detection, devices appear in the left frame of the Storage Manager window. Double-click the device you want to configure to open the Subsystem Management console:



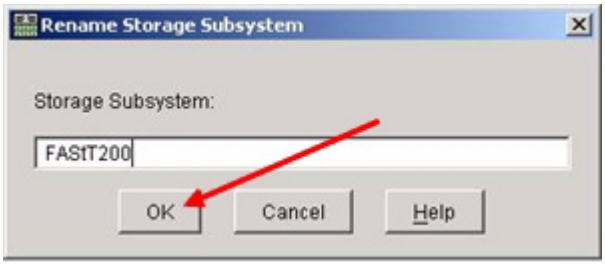
## Assigning a Device Name

Assigning a device name is an optional step that helps to identify and manage devices.

1. In the Subsystem Management window, highlight the unnamed device and select **Rename** from the Storage Subsystem menu:

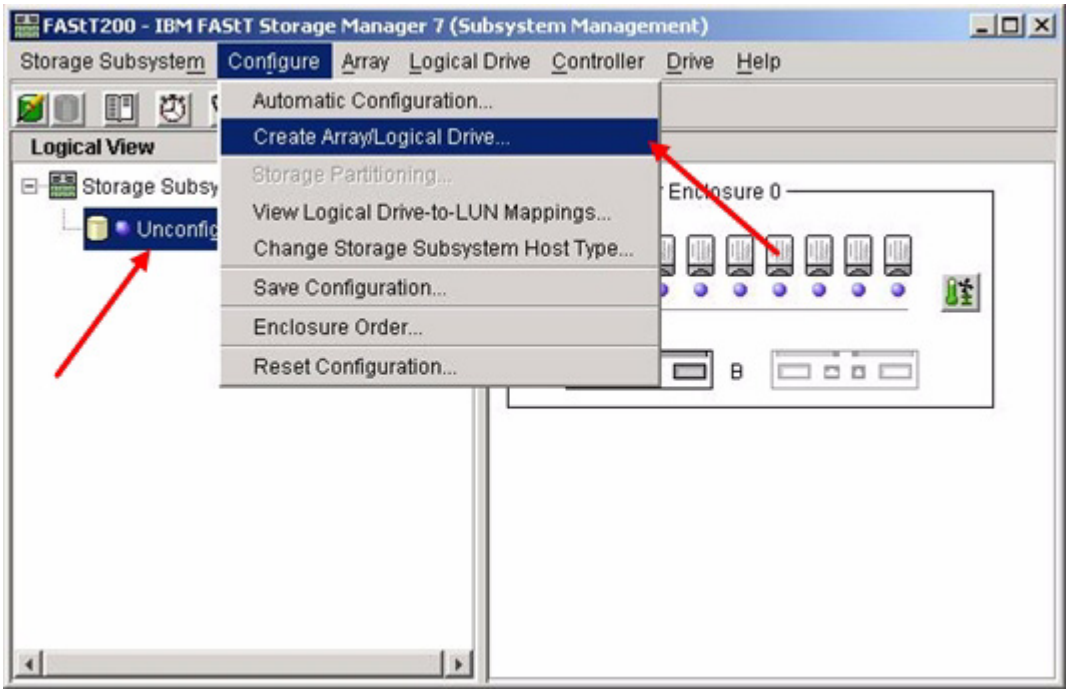



2. Enter a name for the **Storage Subsystem** and click **OK**:

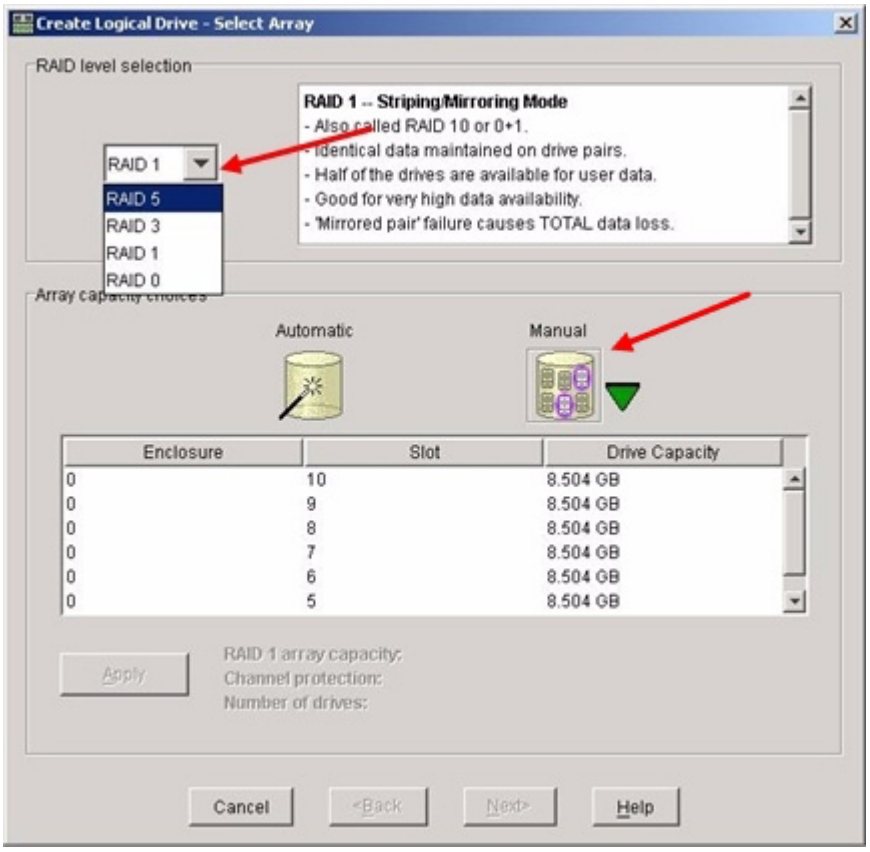


## Creating a RAID Group and Logic Drives

1. From the Storage Subsystem window:
   a. Select the **Unconfigured Capacity** item from the Logical View list in the left frame.
   b. From the Configure menu, select **Create Array/Logical Drive…**



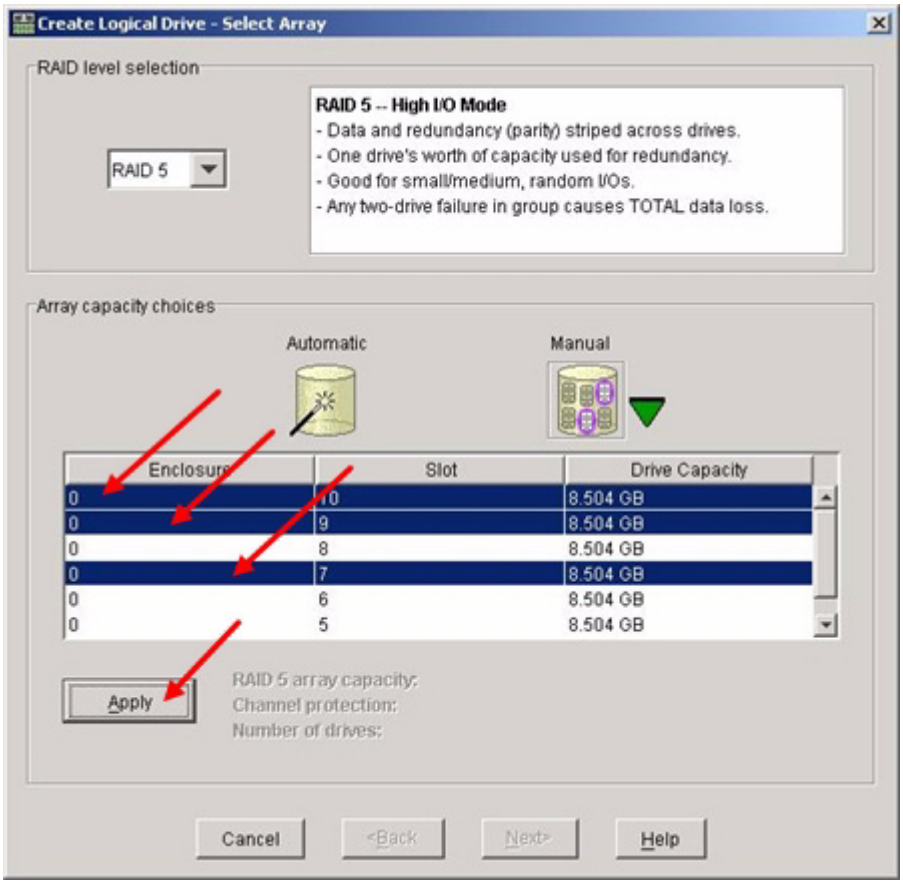
2. From the Create Logical Drive – Select Array window, click **Manual** and choose the **RAID level selection** for your array:




c. Select the drives you want to include in the RAID array.

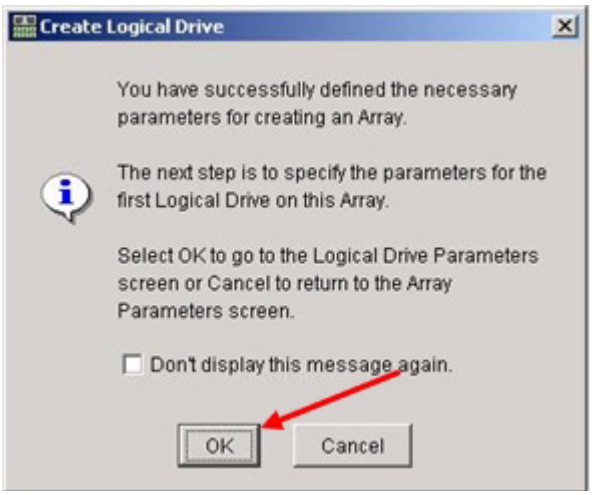
d. Click **Apply**. (The Apply button is enabled after you select an appropriate number of drives for the RAID level. For example, RAID 5 requires at least three drives; RAID 1 requires multiples of two drives.)

**NOTE:** You can only create one array at a time. To create more than one array, repeat these steps until you have utilized all the available drives.

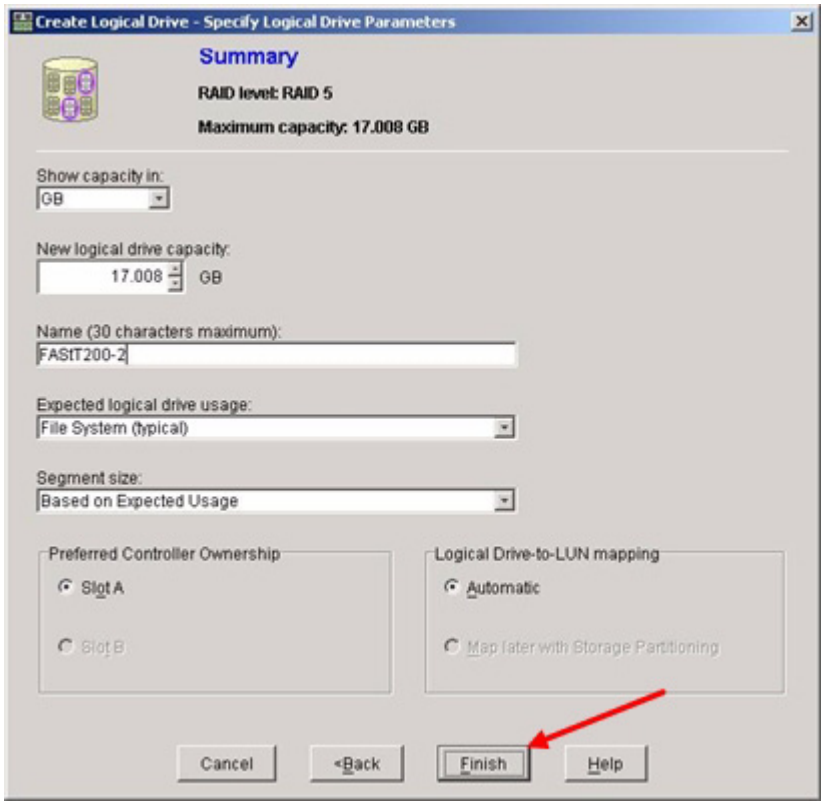



e. Click **Next**.

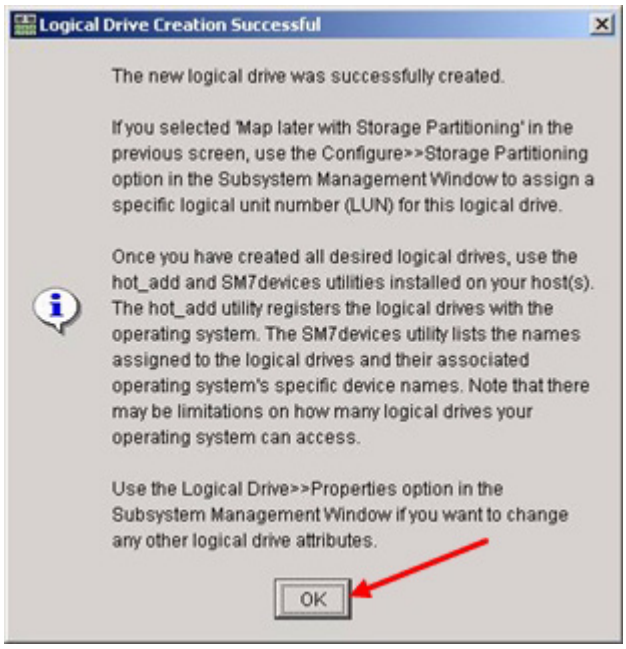
3. Click **OK** to close the confirmation message and proceed to the Logical Drive Parameters window:


Create Logical Drive
You have successfully defined the necessary parameters for creating an Array.
The next step is to specify the parameters for the first Logical Drive on this Array.
Select OK to go to the Logical Drive Parameters screen or Cancel to return to the Array Parameters screen.
Don't display this message again.
OK
Cancel

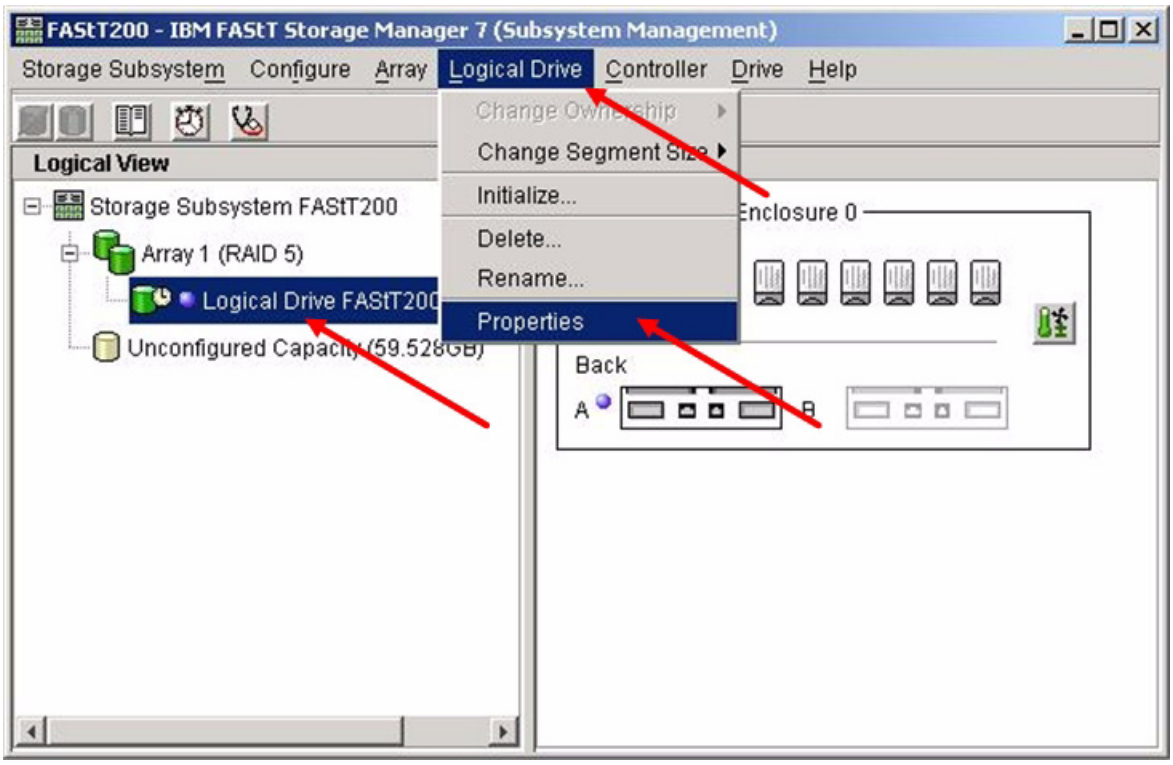
4. Enter the logical drive parameters and click **Finish**:



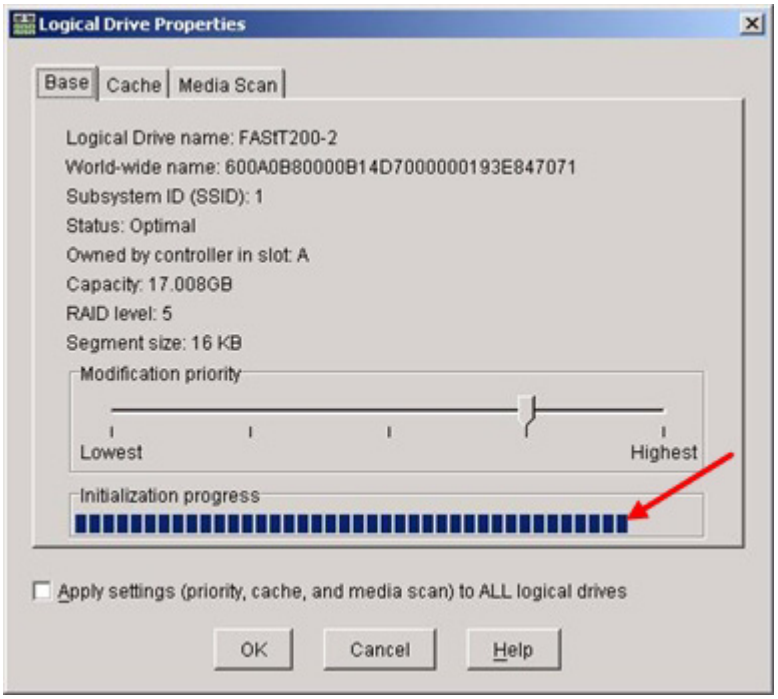
5. Click **OK** to acknowledge the confirmation message:


Logical Drive Creation Successful
The new logical drive was successfully created.
If you selected 'Map later with Storage Partitioning' in the previous screen, use the Configure>>Storage Partitioning option in the Subsystem Management Window to assign a specific logical unit number (LUN) for this logical drive.
Once you have created all desired logical drives, use the hot_add and SM7devices utilities installed on your host(s). The hot_add utility registers the logical drives with the operating system. The SM7devices utility lists the names assigned to the logical drives and their associated operating system's specific device names. Note that there may be limitations on how many logical drives your operating system can access.
Use the Logical Drive>>Properties option in the Subsystem Management Window if you want to change any other logical drive attributes.
OK

6. The newly created array automatically starts initializing. To view its progress, highlight the array and, from the Logical Drive menu, choose **Properties**:



7. The progress bar represents the initialization process. Once complete, click **OK** to close the window:




Your new drives are now ready for detection and formatting in the operating system.

# Storage Network Configuration

This section provides instructions to set up and configure the QLogic Fibre Channel switches in the SANbox 5000 Series, the SANbox Express 1400, and the SANbox2-64. Completing the configuration steps in this section prepares the network for host and storage connections.

## Fibre Channel Switches from QLogic

Deployed as standalone units or in multi-stage fabrics of any size, QLogic SANbox switches come with all the software tools necessary to create easy-to-manage, resilient and intelligent SANs. For additional information, see http://www.qlogic.com/products/fc_san_switchs.asp.

### SANbox 5000 Series Stackable Switches

The SANbox 5000 Series switches provide the same benefits as stackable IP switches for your SAN. The SANbox 5200 is the first switch in the new SANbox 5000 Series, providing the benefits of stackable IP switches for your SAN. With up to sixteen 2Gb ports plus a four-pack of high-speed 10Gb ISL ports, each 5200 stackable switch provides maximum flexibility for configuring, managing and scaling SANs.

The SANbox 5602 stackable switch delivers the benefits of stackable IP switches for high performance 4Gb SANs. With up to sixteen 4Gb ports plus a four-pack of high-speed 10Gb ISL ports, each 5000 Series stackable switch provides maximum flexibility for workgroup or enterprise class SANs.

### SANbox Express 1400 Switch

The easy-to-use, the entry-level SANbox Express 1400 allows small businesses to enjoy the benefits of networked storage without having to hire a SAN expert. The SANbox Express 1400 requires just half a rack slot, so two units can be placed in a single slot for a total of 20 ports. Each SANbox Express 1400 has 10 2Gb ports and is interoperable with all C-SW-2 compliant Fibre Channel switches.

### SANbox2-64 Switches

The SANbox2-64 switches offer a scalable, highly available solution to protect the investment in your SAN backbone. These next-generation switches bring performance, reliability and simplicity to storage networking. The SANbox2-64 switch is designed to meet the needs of your growing enterprise.

## Configuration Process

The configuration process for your SANbox switch involves three stages described in the following sections:

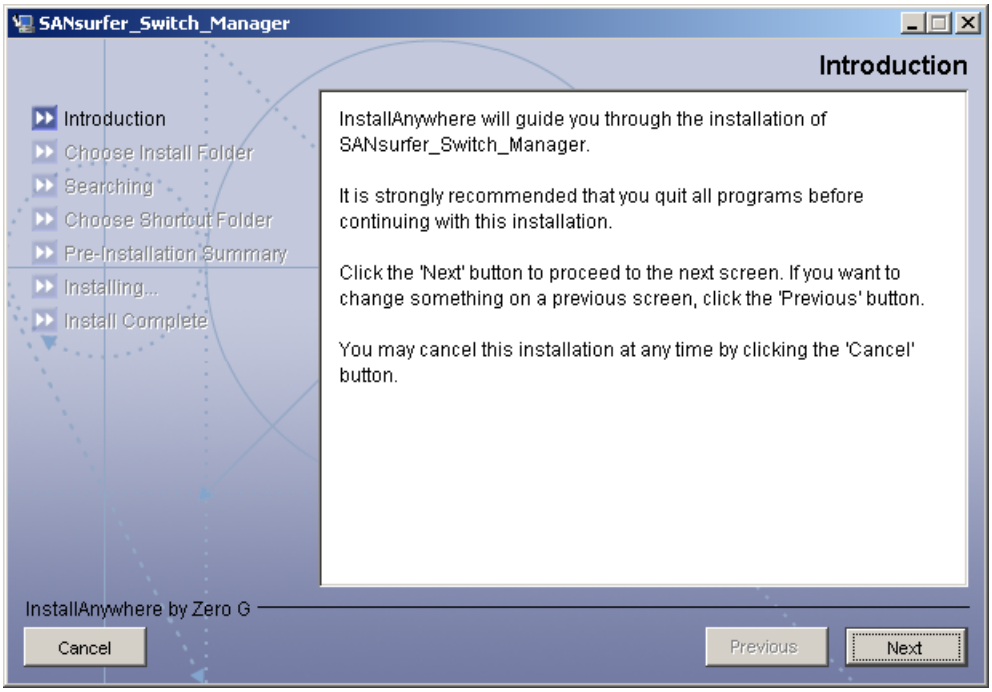
- Installing the SANsurfer Switch Manager
- Initial Switch Configuration
- Switch-Specific Configuration Steps

## Installing the SANsurfer Switch Manager

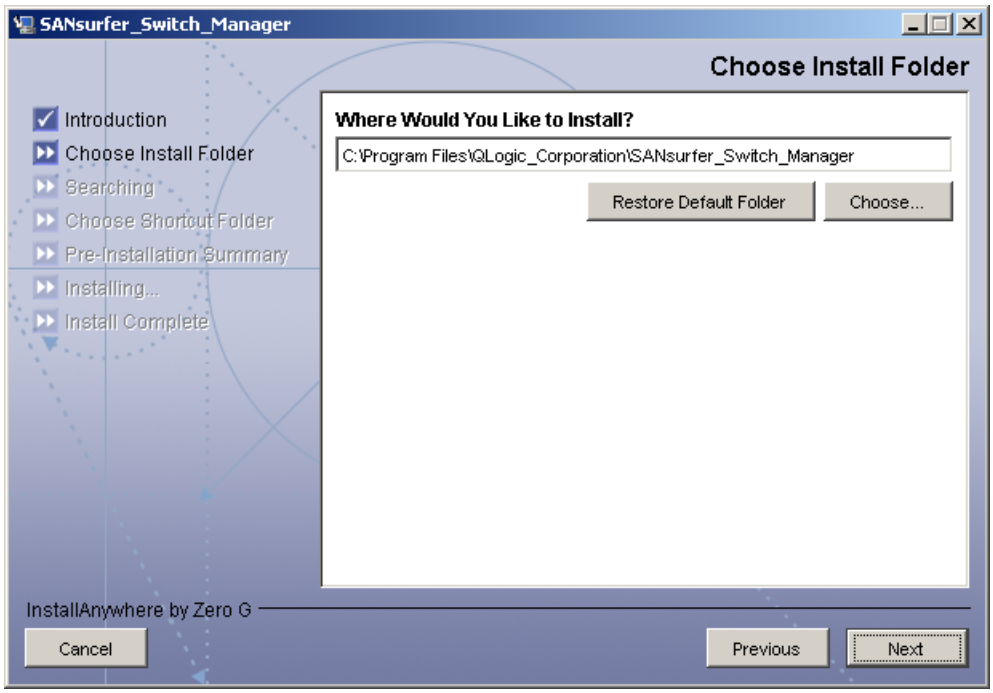
You can use the SANsurfer Switch Manager to configure the SANbox Express 1400, the SANbox 5000 Series, and the SANbox2-64. To install the SANsurfer Switch Manager, follow these steps:

*NOTE:* The following steps explain how to download and install the SANsurfer Switch Manager separately from the SANsurfer Management Suite.

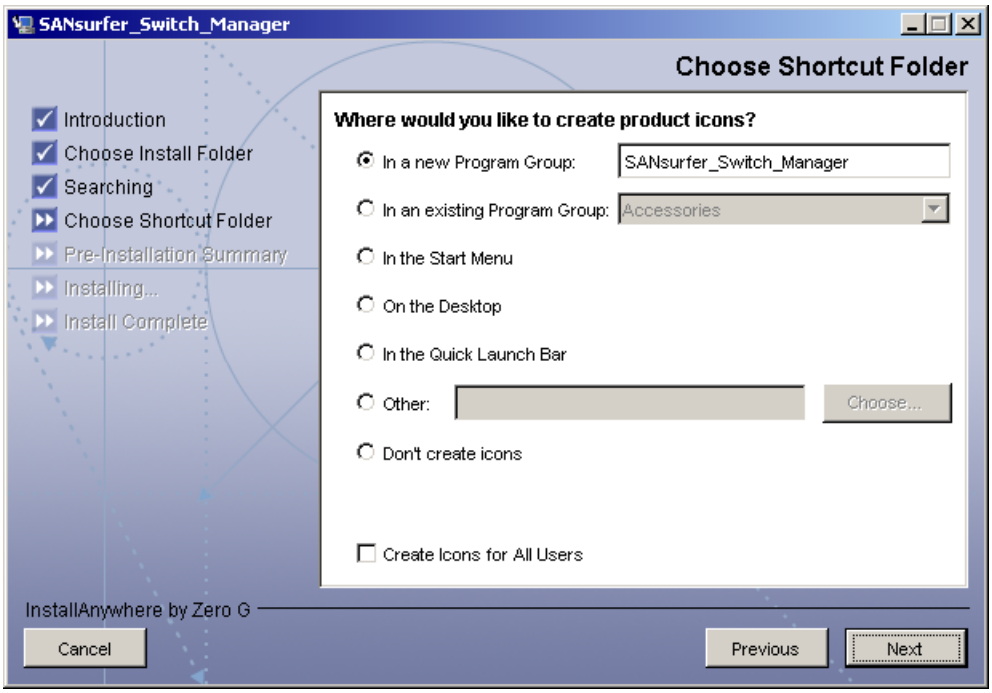
1. Download the SANsurfer Switch Manager from the Download section of the QLogic website (http://www.qlogic.com/support/drivers_software.asp) and double-click the icon to start the installation.
2. From the Introduction screen, click **Next**:


SANsurfer_Switch_Manager
Introduction
Introduction
Choose Install Folder
Searching
Choose Shortcut Folder
Pre-Installation Summary
Installing...
Install Complete
InstallAnywhere will guide you through the installation of SANsurfer_Switch_Manager.
It is strongly recommended that you quit all programs before continuing with this installation.
Click the 'Next' button to proceed to the next screen. If you want to change something on a previous screen, click the 'Previous' button.
You may cancel this installation at any time by clicking the 'Cancel' button.
InstallAnywhere by Zero G
Cancel
Previous
Next

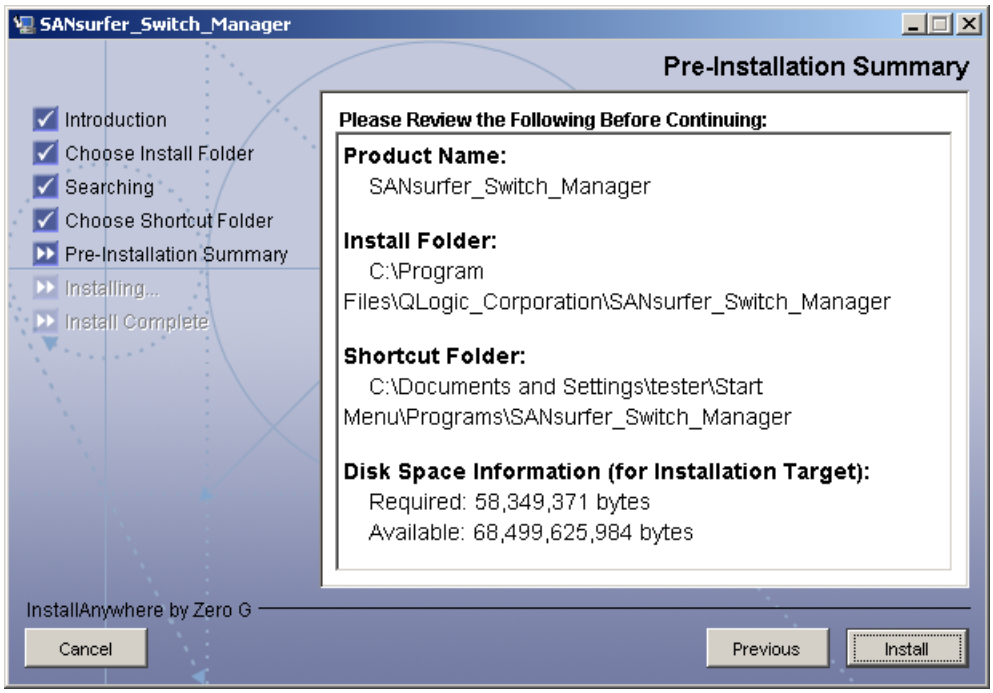
3. From the Choose Install Folder screen:
   a. Select an installation folder.
   b. Click **Next**.



4. Choose where to create product icons or shortcuts to the SANsurfer Switch Manager:



5. From the Pre-Installation Summary screen, review the configuration information and click **Install** to start the installation.

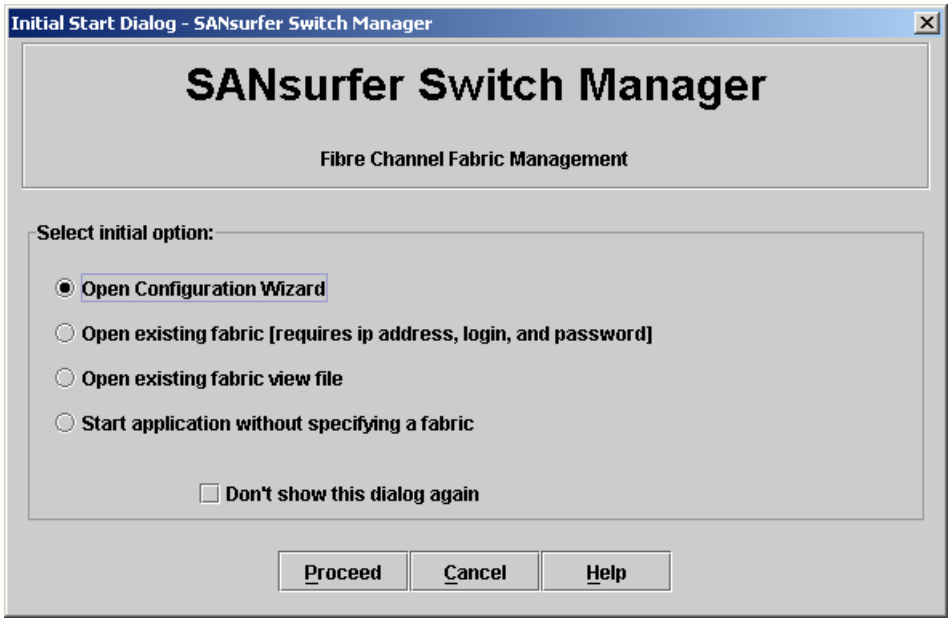



6. When you see the Installation Complete message, click **Done** to close the window.

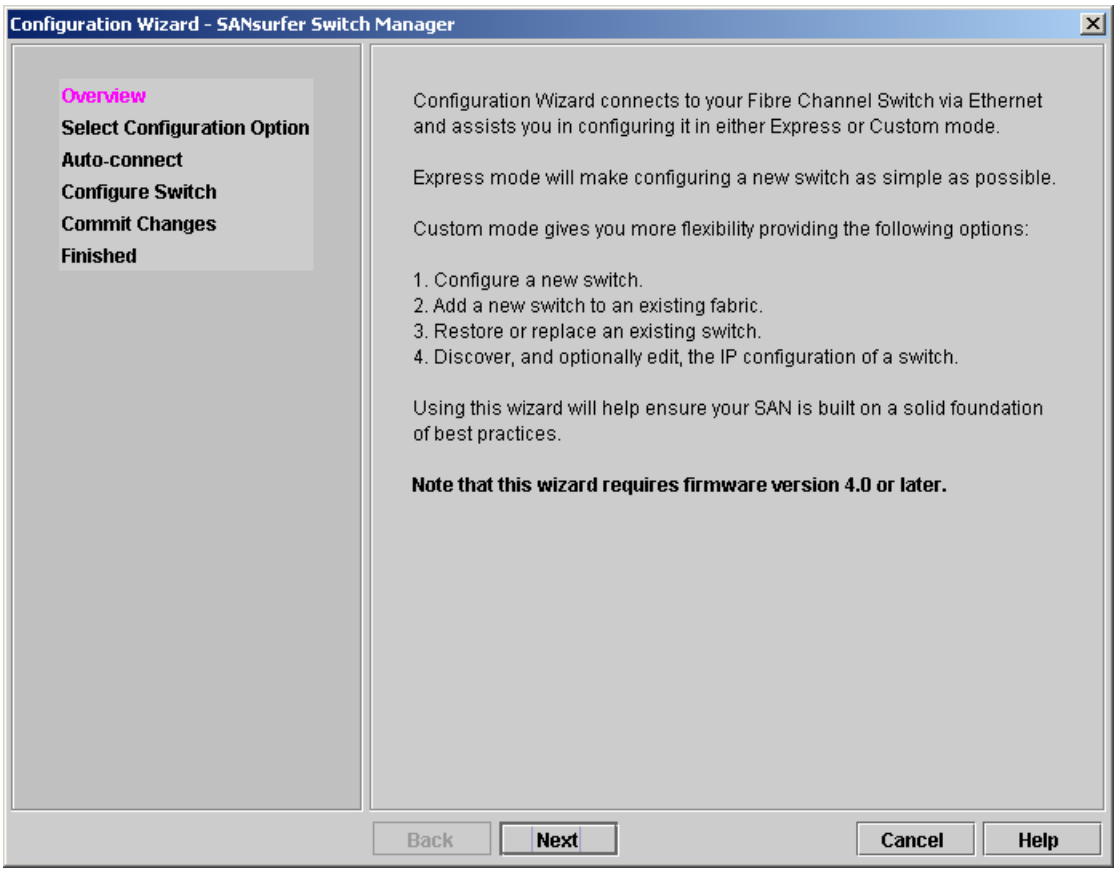
## Initial Switch Configuration

The following steps are the same for the SANbox Express 1400, SANbox2-64, and SANbox 5000 Series switches.

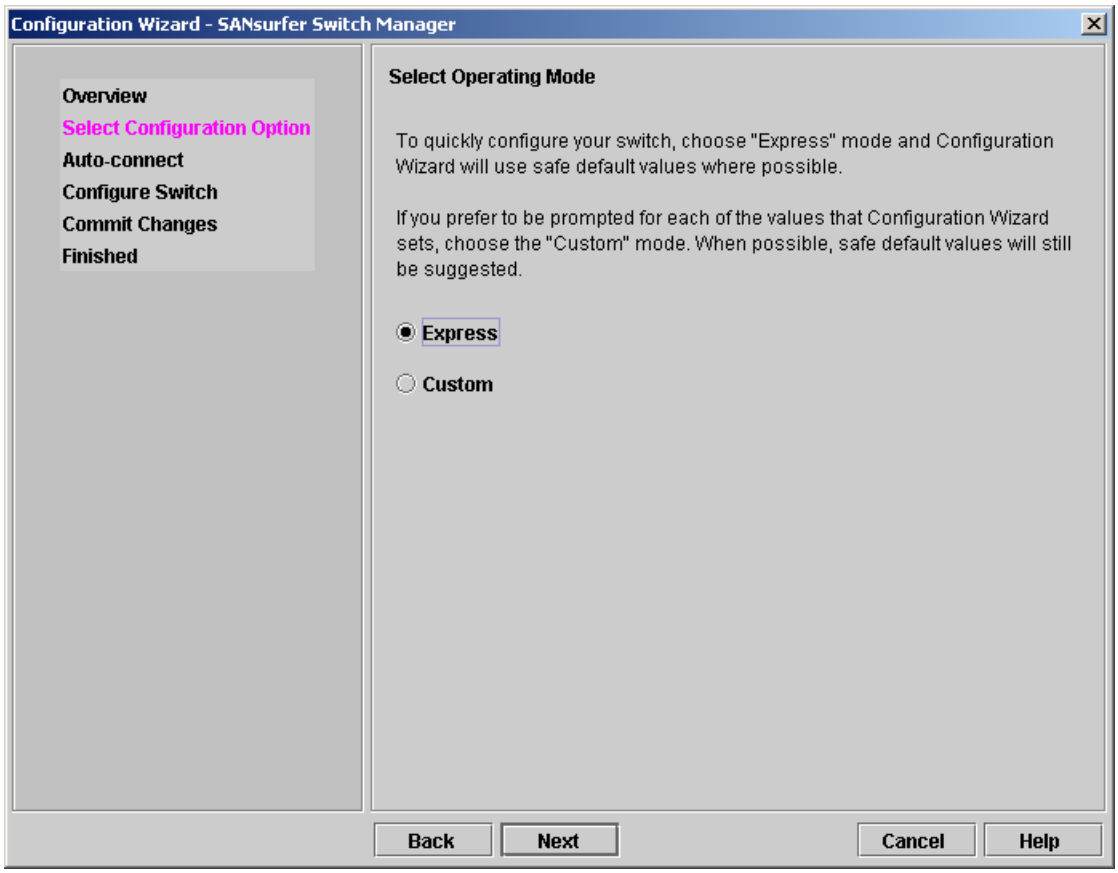
1. Launch SANsurfer Switch Manager.
2. From the Initial Start Dialog:
   a. Select **Open Configuration Wizard**.
   b. Click **Proceed**.


Initial Start Dialog - SANsurfer Switch Manager
SANsurfer Switch Manager
Fibre Channel Fabric Management
Select initial option:
Open Configuration Wizard
Open existing fabric [requires ip address, login, and password]
Open existing fabric view file
Start application without specifying a fabric
Don't show this dialog again
Proceed
Cancel
Help

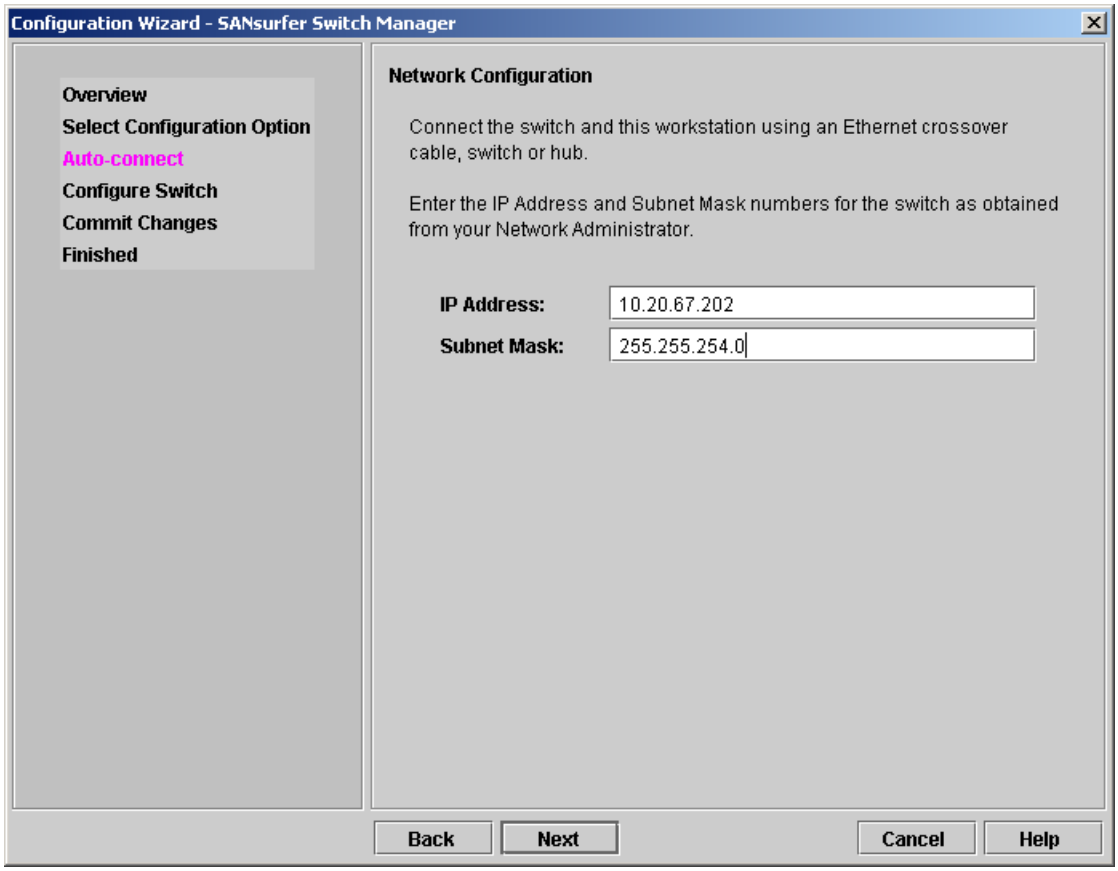
3. From the Overview window, click **Next**:


Configuration Wizard - SANsurfer Switch Manager
Overview
Select Configuration Option
Auto-connect
Configure Switch
Commit Changes
Finished
Configuration Wizard connects to your Fibre Channel Switch via Ethernet and assists you in configuring it in either Express or Custom mode.
Express mode will make configuring a new switch as simple as possible.
Custom mode gives you more flexibility providing the following options:
1. Configure a new switch.
2. Add a new switch to an existing fabric.
3. Restore or replace an existing switch.
4. Discover, and optionally edit, the IP configuration of a switch.
Using this wizard will help ensure your SAN is built on a solid foundation of best practices.
Note that this wizard requires firmware version 4.0 or later.
Back
Next
Cancel
Help

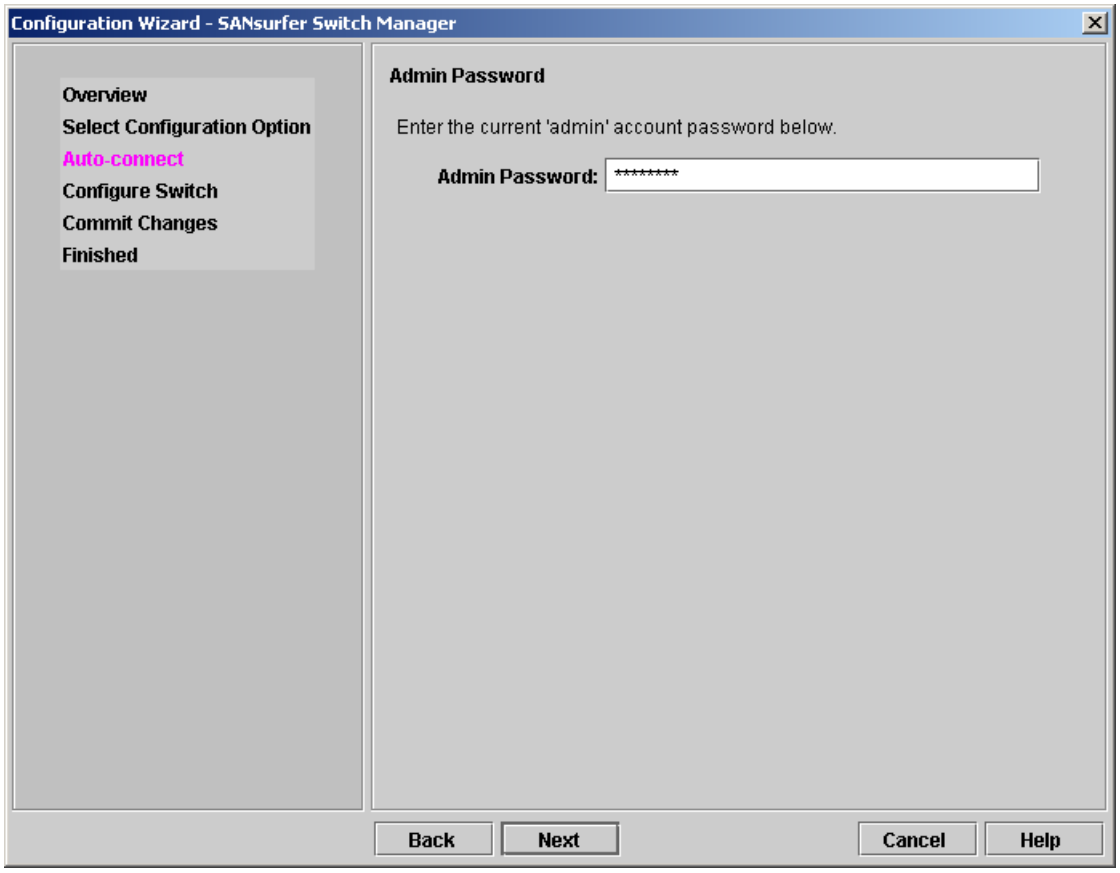
4. From the Select Operating Mode window:
   a. Select **Express**.
   b. Click **Next**.


Configuration Wizard - SANsurfer Switch Manager
Overview
Select Configuration Option
Auto-connect
Configure Switch
Commit Changes
Finished
Select Operating Mode
To quickly configure your switch, choose "Express" mode and Configuration Wizard will use safe default values where possible.
If you prefer to be prompted for each of the values that Configuration Wizard sets, choose the "Custom" mode. When possible, safe default values will still be suggested.
Express
Custom
Back
Next
Cancel
Help

5. From the Network Configuration window:
   a. Enter a temporary IP address and Subnet Mask.
   b. Click **Next**.

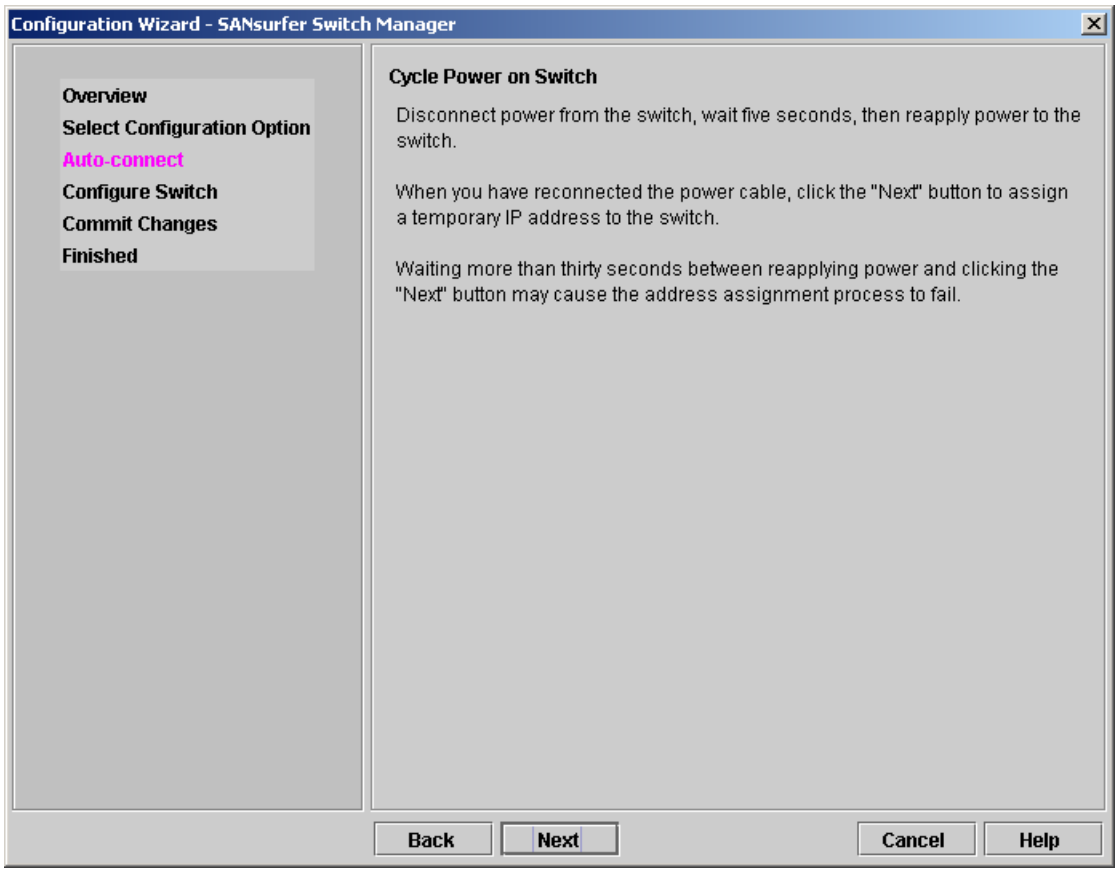


6. Enter "password" into the Admin Password field and click **Next**.

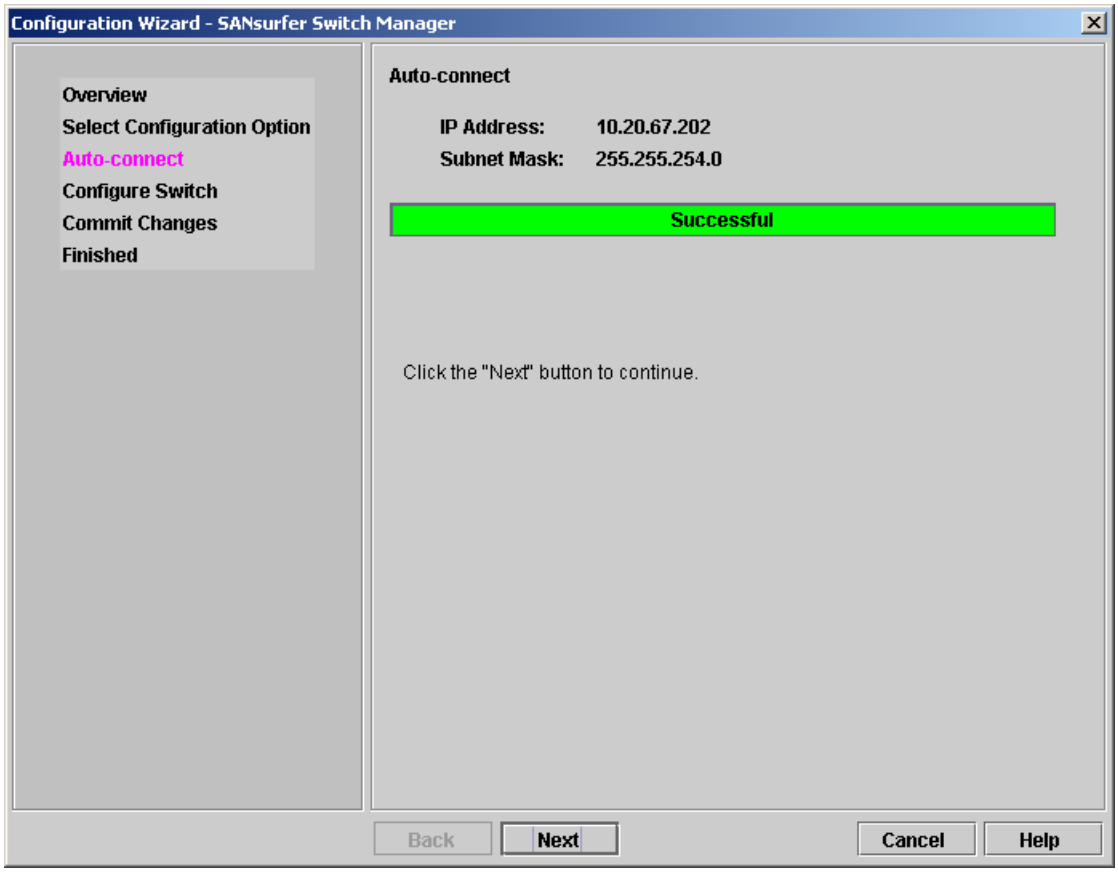



*NOTE:* User authentication is enabled by default.

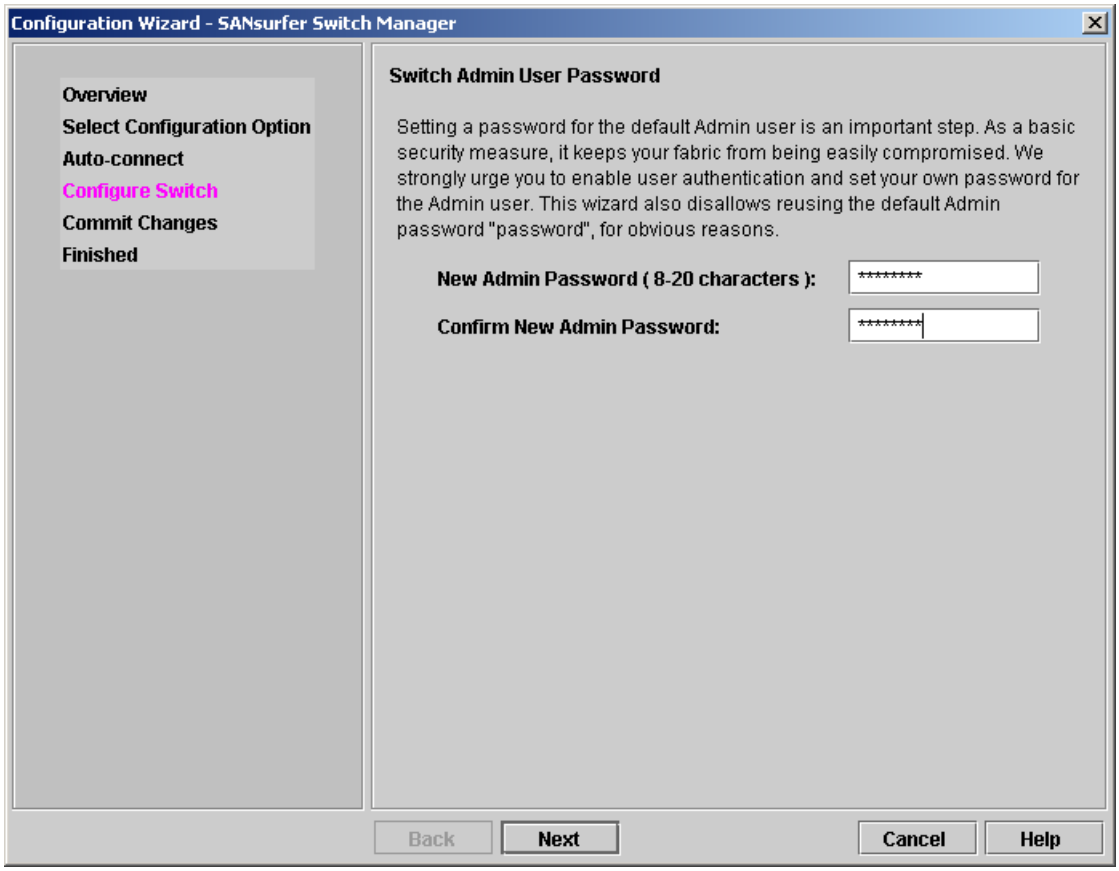
7. When the Cycle Power on Switch window displays:
   a. Power on or cycle power on the switch.
   b. Click **Next** after re-applying power to the switch.


Configuration Wizard - SANsurfer Switch Manager
Overview
Select Configuration Option
Auto-connect
Configure Switch
Commit Changes
Finished
Cycle Power on Switch
Disconnect power from the switch, wait five seconds, then reapply power to the switch.
When you have reconnected the power cable, click the "Next" button to assign a temporary IP address to the switch.
Waiting more than thirty seconds between reapplying power and clicking the "Next" button may cause the address assignment process to fail.
Back
Next
Cancel
Help

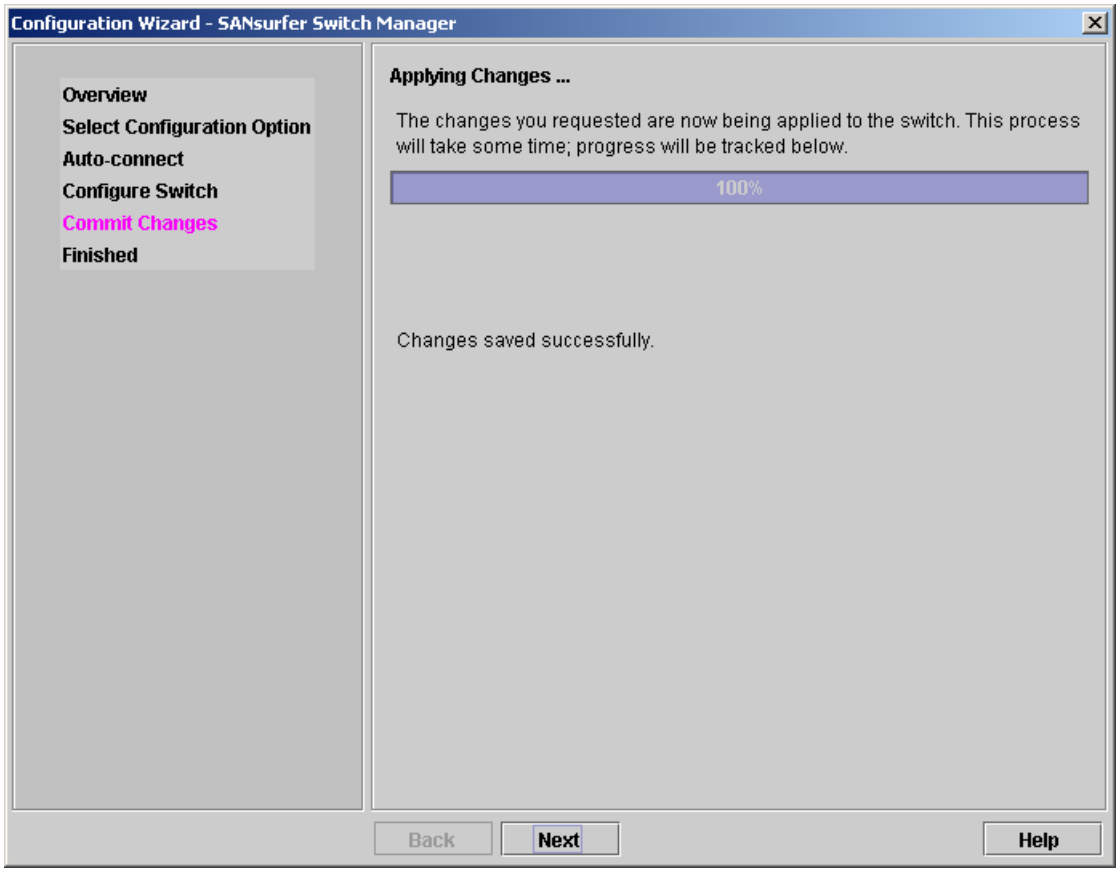
8. Click **Next** wen the initial network configuration is complete:



9. Enter a new password for the **Admin** account and click **Next**:


Configuration Wizard - SANsurfer Switch Manager
Overview
Select Configuration Option
Auto-connect
Configure Switch
Commit Changes
Finished
Switch Admin User Password
Setting a password for the default Admin user is an important step. As a basic security measure, it keeps your fabric from being easily compromised. We strongly urge you to enable user authentication and set your own password for the Admin user. This wizard also disallows reusing the default Admin password "password", for obvious reasons.
New Admin Password ( 8-20 characters ):
Confirm New Admin Password:
Back
Next
Cancel
Help

10. Click **Next** to commit all the changes:




11. Click **Close** to exit the configuration wizard:

## Command Line Configuration

You can use the following serial port settings to perform the command line switch configuration:

- Baud Rate: 9600
- Data Bits: 8
- Parity: None
- Stop Bits: 1
- Flow Control: None

To configure the switch from the command line, follow these steps:

1. Log in to the switch.
2. Enter administrator mode:

```
SANbox #> admin start
```

3. Start the switch setup program to configure the IP address by typing this command:

```
SANbox (admin) #> set setup system
```

4. When the setup program runs, follow the command line instructions. For example:

```
A list of attributes with formatting and current values will follow.
Enter a new value or simply press the ENTER key to accept the current value.
If you wish to terminate this process before reaching the end of the list
press 'q' or 'Q' and the ENTER key to do so.
Eth0NetworkDiscovery (1=Static, 2=Bootp, 3=Dhcp, 4=Rarp) [Static ]
Eth0NetworkAddress (dot-notated IP Address) [0.0.0.0 ] <IP Address>
Eth0NetworkMask (dot-notated IP Address) [0.0.0.0 ] <Netmask>
Eth0GatewayAddress (dot-notated IP Address) [0.0.0.0 ] <Gateway>
AdminTimeout (dec value 0-1440 minutes, 0=never) [30 ]
InactivityTimeout (dec value 0-1440 minutes, 0=never) [0 ]
LocalLogEnabled (True / False) [True ]
RemoteLogEnabled (True / False) [False ]
RemoteLogHostAddress (dot-notated IP Address) [10.0.0.254 ]
NTPClientEnabled (True / False) [False ]
NTPServerAddress (dot-notated IP Address) [10.0.0.254 ]
EmbeddedGUIEnabled (True / False) [True ]
Do you want to save and activate this system setup? (y/n): [n] y
System setup saved and activated.
```

### Switch-Specific Configuration Steps

The additional steps to configure your SANbox switch are similar, whether you use the SANbox 5000 Series, the SANbox1400 Series, or the SANbox2-64. After you install the SANsurfer Switch Manager and perform the initial switch configuration, refer to the appropriate section for your switch:

- SANbox 5000 Series and SANbox Express 1400 Configuration
- SANbox2-64 Configuration

# SANbox 5000 Series and SANbox Express 1400 Configuration

The following procedures explain how to configure the SANbox 5602 switch, verify the connections and test your configuration:

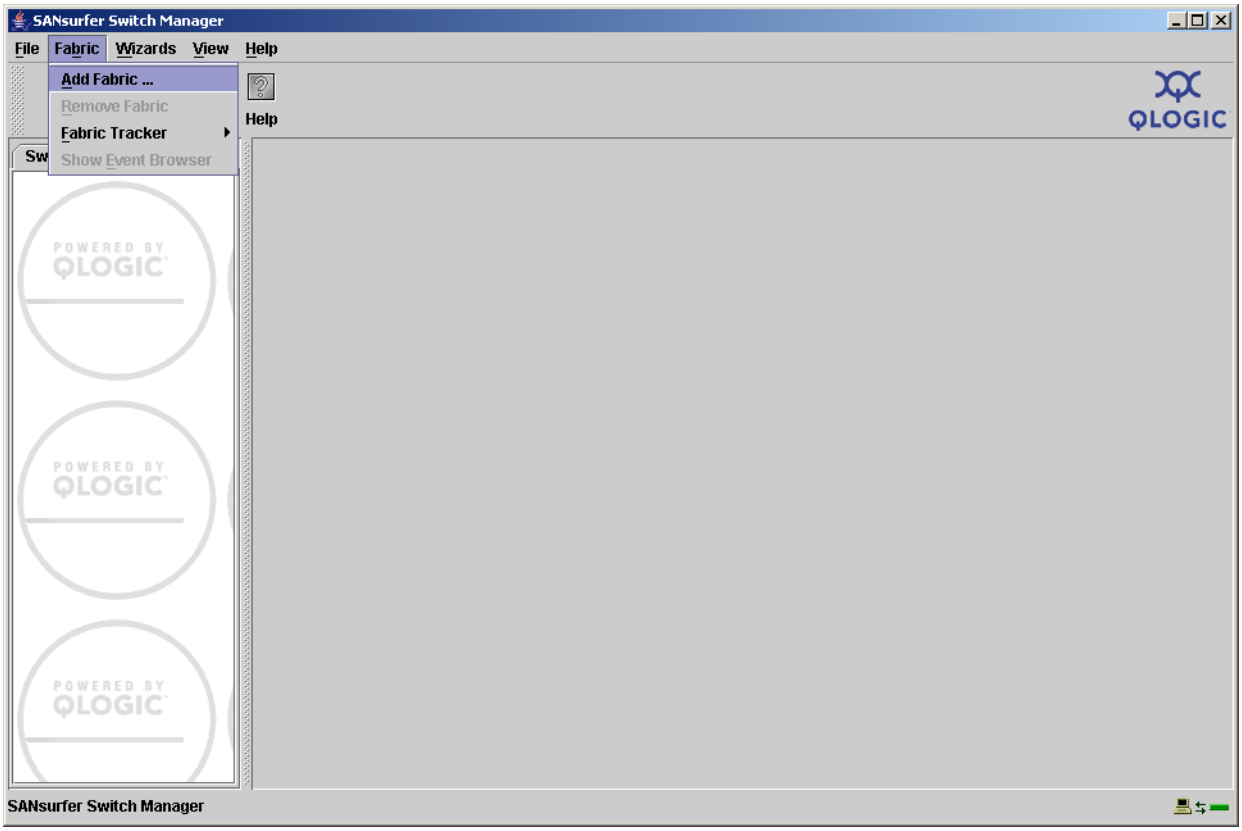
- SANbox 5000 Series Port Properties
- SANbox Express 1400 Port Properties
- Connecting Cables
- Configuring Zones

## SANbox 5000 Series Port Properties

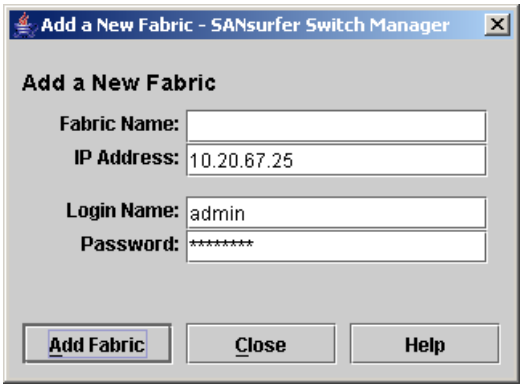
1. Click **Yes** when the Warning - Security dialog displays:

Warning - Security
Do you want to trust the signed applet distributed by "QLogic Corp."?
Publisher authenticity verified by: "Thawte Consulting cc"
The security certificate was issued by a company that is trusted.
The security certificate has not expired and is still valid.
Caution: "QLogic Corp." asserts that this content is safe. You should only accept this content if you trust "QLogic Corp." to make that assertion.
More Details
Yes
No
Always

2. Choose **Add Fabric** from the **Fabric** menu:

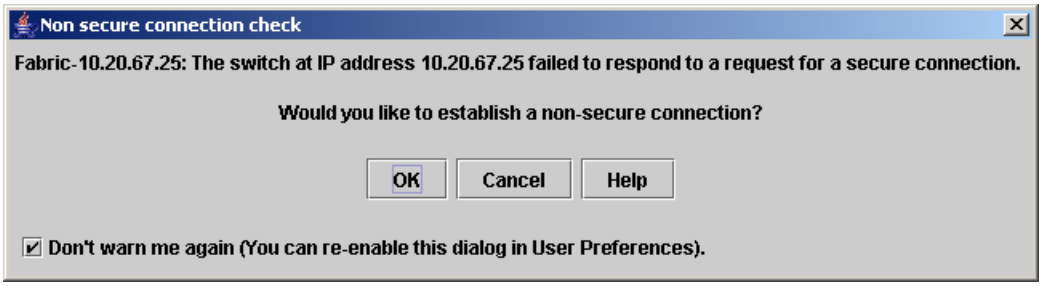



3. From the Add a New Fabric dialog:
   a. Enter a **Fabric Name**, **IP Address**, **Login Name**, and **Password**.
   b. Click **Add Fabric**.

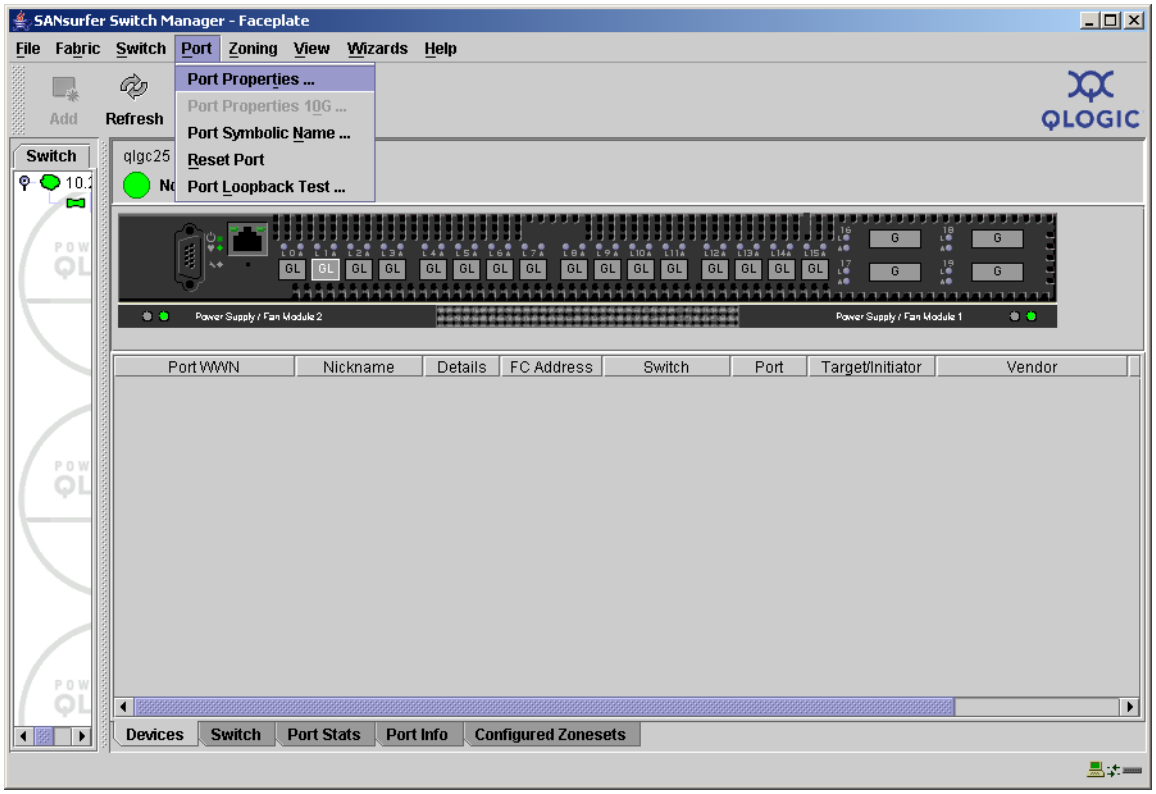


4. If the following message appears, click **OK** to open an unsecured connection to the switch. Otherwise, proceed to step 4.

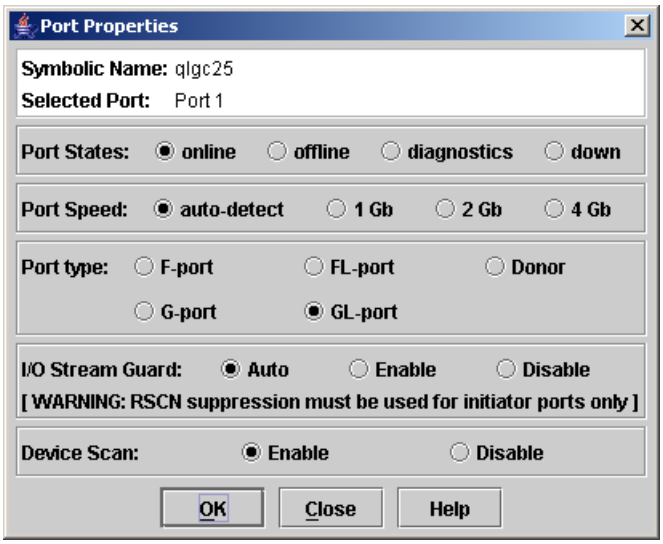
   *NOTE:* This message appears only when you do not have SSH installed on the system where you are running the SANsurfer Switch Manager.


Non secure connection check
Fabric-10.20.67.25: The switch at IP address 10.20.67.25 failed to respond to a request for a secure connection.
Would you like to establish a non-secure connection?
OK
Cancel
Help
Don't warn me again (You can re-enable this dialog in User Preferences).

5. From the SANsurfer Switch Manager – Faceplate window:
   a. Select one or more 1/2/4Gb ports from the list.
   b. Select **Port Properties** from the Port menu.



6. From the Port Properties dialog:
   a. Select the desired port settings.
   b. Click **OK**.


Port Properties
Symbolic Name: qlgc25
Selected Port: Port 1
Port States: online offline diagnostics down
Port Speed: auto-detect 1 Gb 2 Gb 4 Gb
Port type: F-port FL-port Donor
G-port GL-port
I/O Stream Guard: Auto Enable Disable
[ WARNING: RSCN suppression must be used for initiator ports only ]
Device Scan: Enable Disable
OK
Close
Help

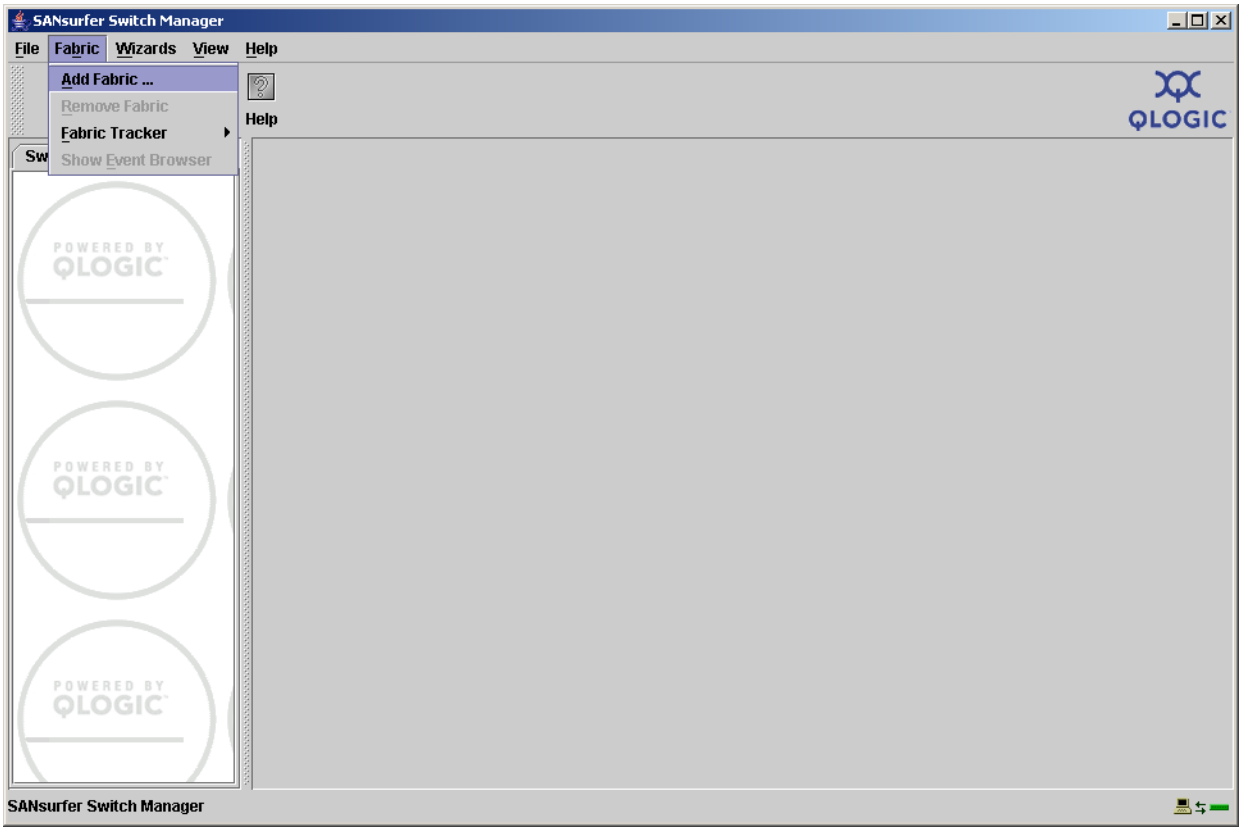
7. Click **OK** to close the Updating Port Properties message:

Updating Port Properties
Your changes have been successfully completed on the switch.
Wait while newly updated information is read in from the switch.
Status: Complete. Click 'OK' to continue.
OK

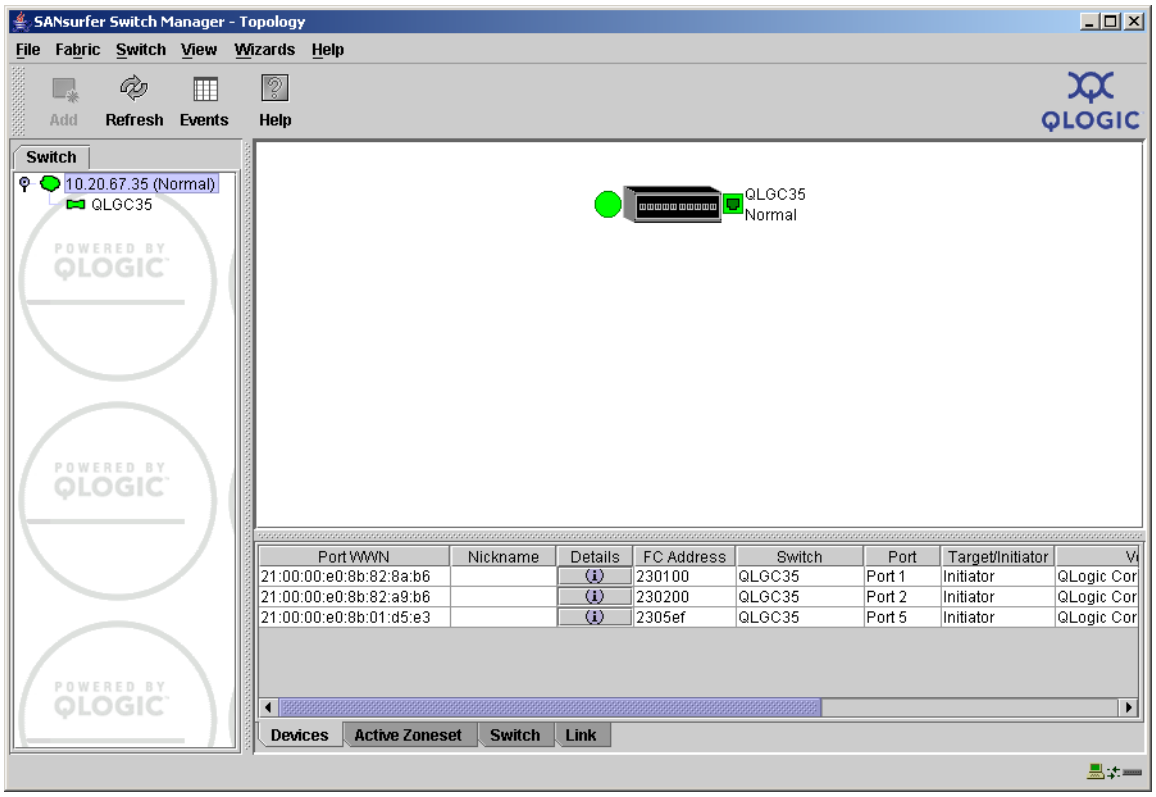
## SANbox Express 1400 Port Properties

Perform the following steps for the SANbox 1400 Series switches.

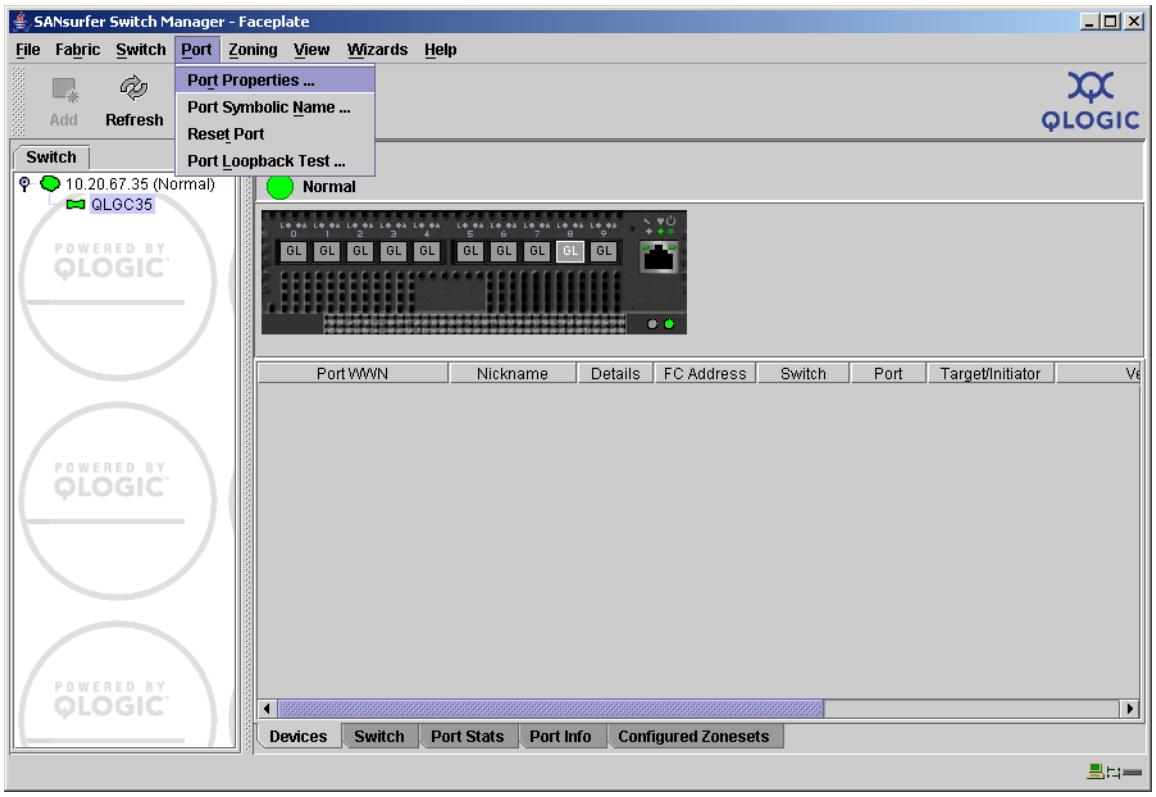
1. From the **Fabric** menu in the SANsurfer Switch Manager, select **Add Fabric**:



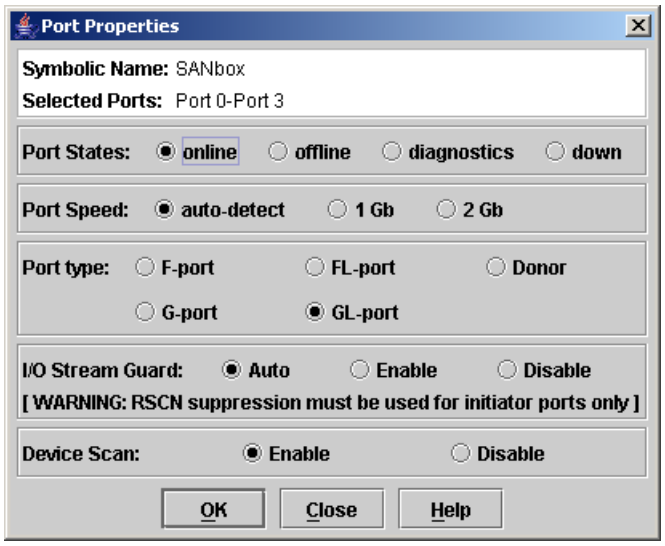
2. Choose the switch to configure from the Switch list:


SANsurfer Switch Manager - Topology
File Fabric Switch View Wizards Help
Add Refresh Events Help
QLOGIC
Switch
10.20.67.35 (Normal)
QLGC35
QLGC35
Normal
Port WWN Nickname Details FC Address Switch Port Target/Initiator
21:00:00:e0:8b:82:8a:b6 230100 QLGC35 Port 1 Initiator QLogic Cor
21:00:00:e0:8b:82:a9:b6 230200 QLGC35 Port 2 Initiator QLogic Cor
21:00:00:e0:8b:01:d5:e3 2305ef QLGC35 Port 5 Initiator QLogic Cor
Devices Active Zoneset Switch Link

3. From the Port menu, choose **Port Properties**:



4. Select the desired port options and click **OK** when you are finished:


Port Properties
Symbolic Name: SANbox
Selected Ports: Port 0-Port 3
Port States: online offline diagnostics down
Port Speed: auto-detect 1 Gb 2 Gb
Port type: F-port FL-port Donor
G-port GL-port
I/O Stream Guard: Auto Enable Disable
[ WARNING: RSCN suppression must be used for initiator ports only ]
Device Scan: Enable Disable
OK
Close
Help

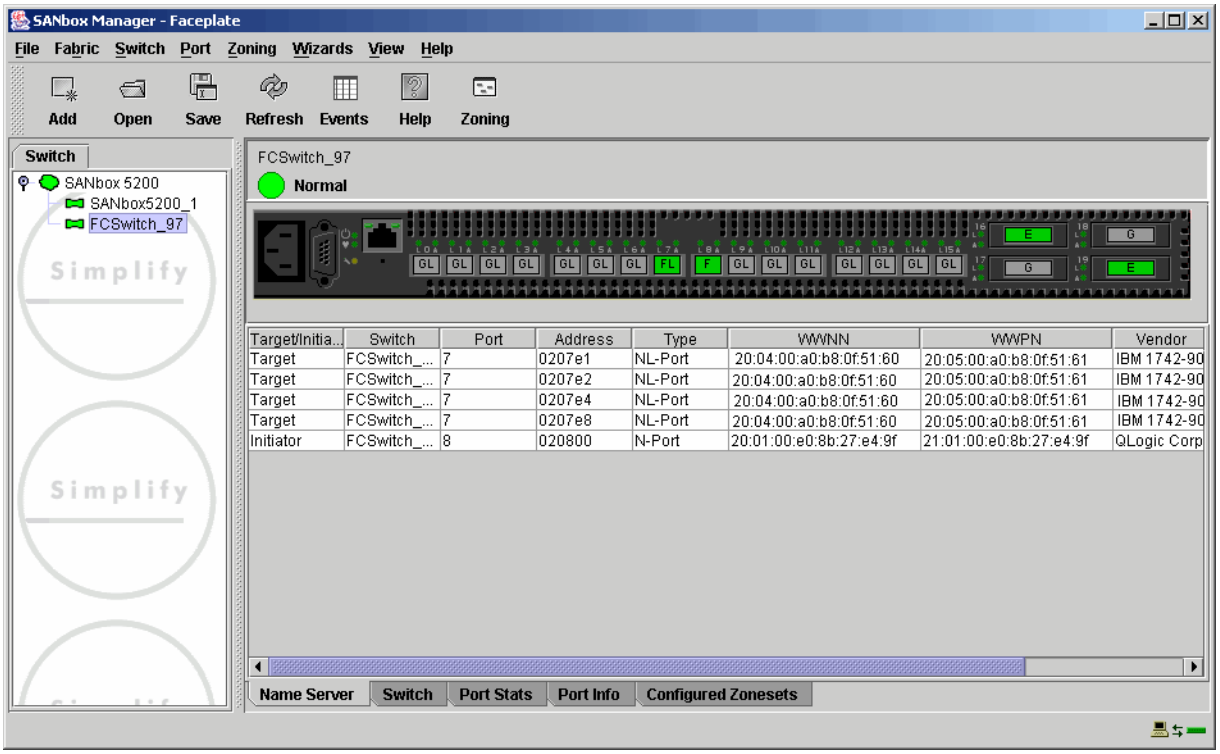
5. When the properties are updated and the following dialog displays, click **OK** to confirm.

## Connecting Cables

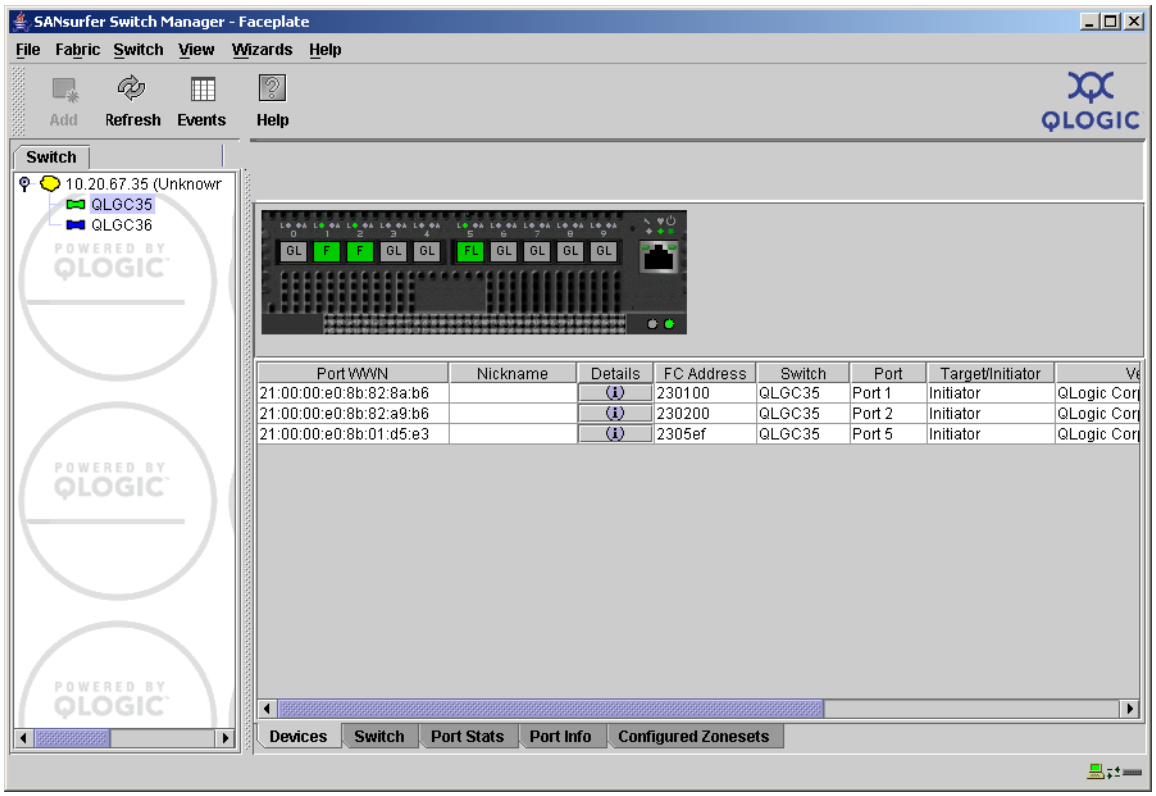
To connect the cables for the SANbox 5000 or SANbox 1400 Series switches, follow these steps:

1. Connect the devices to the switch ports you configured and verify that the green Login LED is illuminated for each device.
2. Launch SANsurfer Switch Manager and connect to the switch.
3. From the SANsurfer Switch Manager – Faceplate window, verify that all devices are listed.

The SANbox 5000 Series switches appear with the following Faceplate window:


SANbox Manager - Faceplate
File Fabric Switch Port Zoning Wizards View Help
Add Open Save Refresh Events Help Zoning
Switch
SANbox 5200
SANbox5200_1
FCSwitch_97
FCSwitch_97
Normal
Target/Initia.. Switch Port Address Type WWNN WWPN Vendor
Target FCSwitch_... 7 0207e1 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e2 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e4 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e8 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Initiator FCSwitch_... 8 020800 N-Port 20:01:00:e0:8b:27:e4:9f 21:01:00:e0:8b:27:e4:9f QLogic Corp
Name Server Switch Port Stats Port Info Configured Zonesets

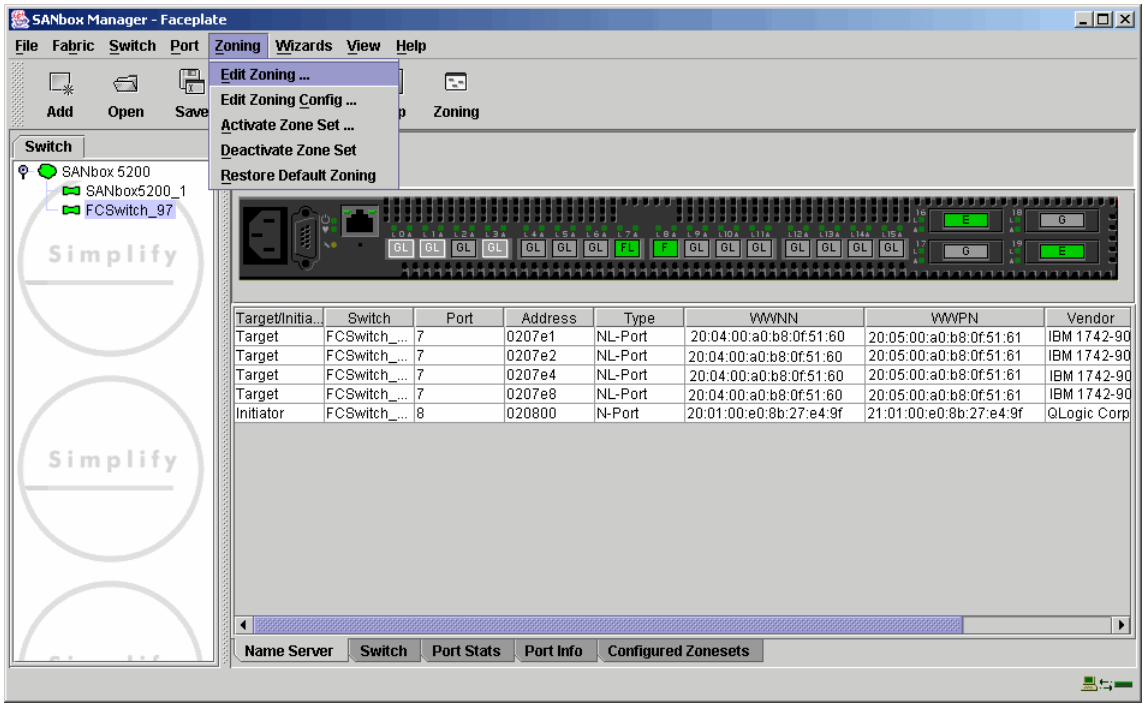
The SANbox Express 1400 switch appears with the following Faceplate window:


SANsurfer Switch Manager - Faceplate
File Fabric Switch View Wizards Help
Add Refresh Events Help
QLOGIC
Switch
10.20.67.35 (Unknowr
QLGC35
QLGC36
POWERED BY QLOGIC
Port WWN Nickname Details FC Address Switch Port Target/Initiator
21:00:00:e0:8b:82:8a:b6 230100 QLGC35 Port 1 Initiator QLogic Cor
21:00:00:e0:8b:82:a9:b6 230200 QLGC35 Port 2 Initiator QLogic Cor
21:00:00:e0:8b:01:d5:e3 2305ef QLGC35 Port 5 Initiator QLogic Cor
Devices Switch Port Stats Port Info Configured Zonesets

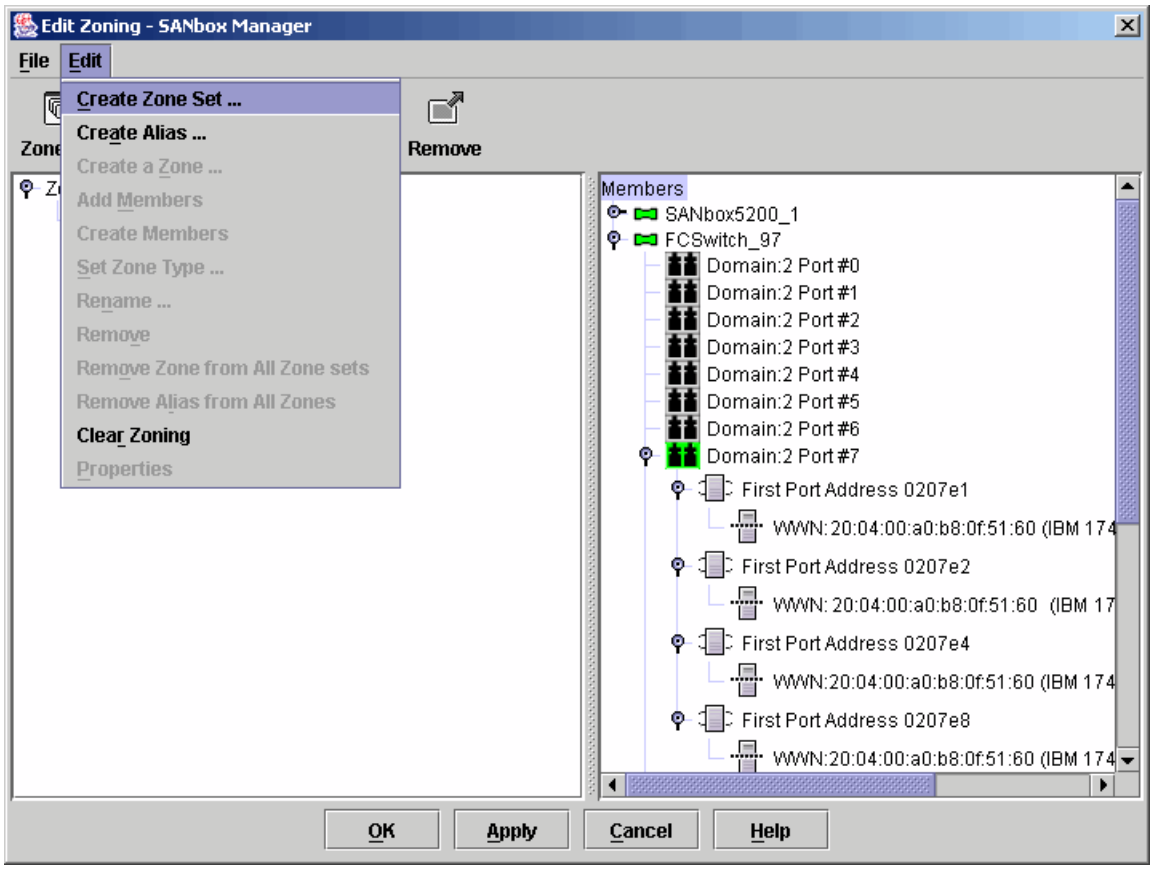
## Configuring Zones

The following steps describe how to configure zoning in the SANsurfer Switch Manager for both the SANbox 5000 Series and SANbox Express 1400 switches. The steps are illustrated using the SANbox 5000 Series.

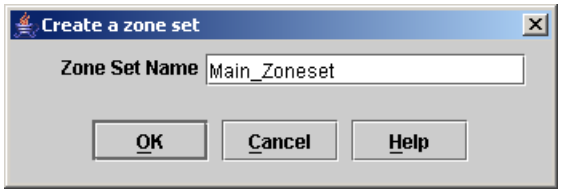
1. Launch the SANsurfer Switch Manager and connect to the switch.
2. From the Zoning menu, select **Edit Zoning**.


SANbox Manager - Faceplate
File Fabric Switch Port Zoning Wizards View Help
Edit Zoning ...
Edit Zoning Config ...
Activate Zone Set ...
Deactivate Zone Set
Restore Default Zoning
Add Open Save Zoning
Switch
SANbox 5200
SANbox5200_1
FCSwitch_97
Simplify
Target/Initia... Switch Port Address Type WWNN WWPN Vendor
Target FCSwitch_... 7 0207e1 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e2 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e4 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e8 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Initiator FCSwitch_... 8 020800 N-Port 20:01:00:e0:8b:27:e4:9f 21:01:00:e0:8b:27:e4:9f QLogic Corp
Name Server Switch Port Stats Port Info Configured Zonesets

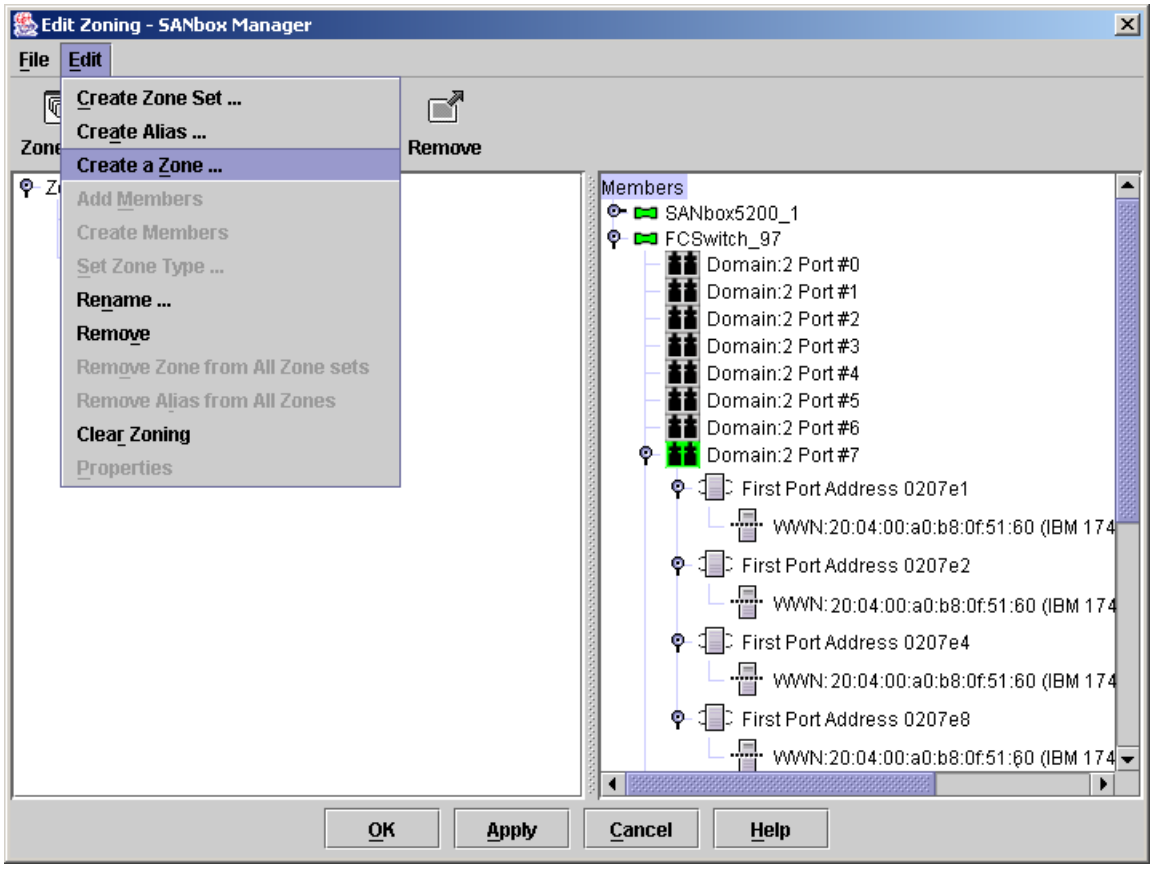
3. From the Edit Zoning dialog, select **Create Zone Set** from the Edit menu:



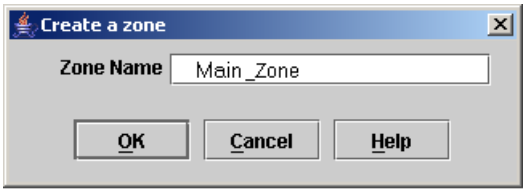

4. From the Create a zone set dialog:
   a. Enter a **Zone Set Name**.
   b. Click **OK**.



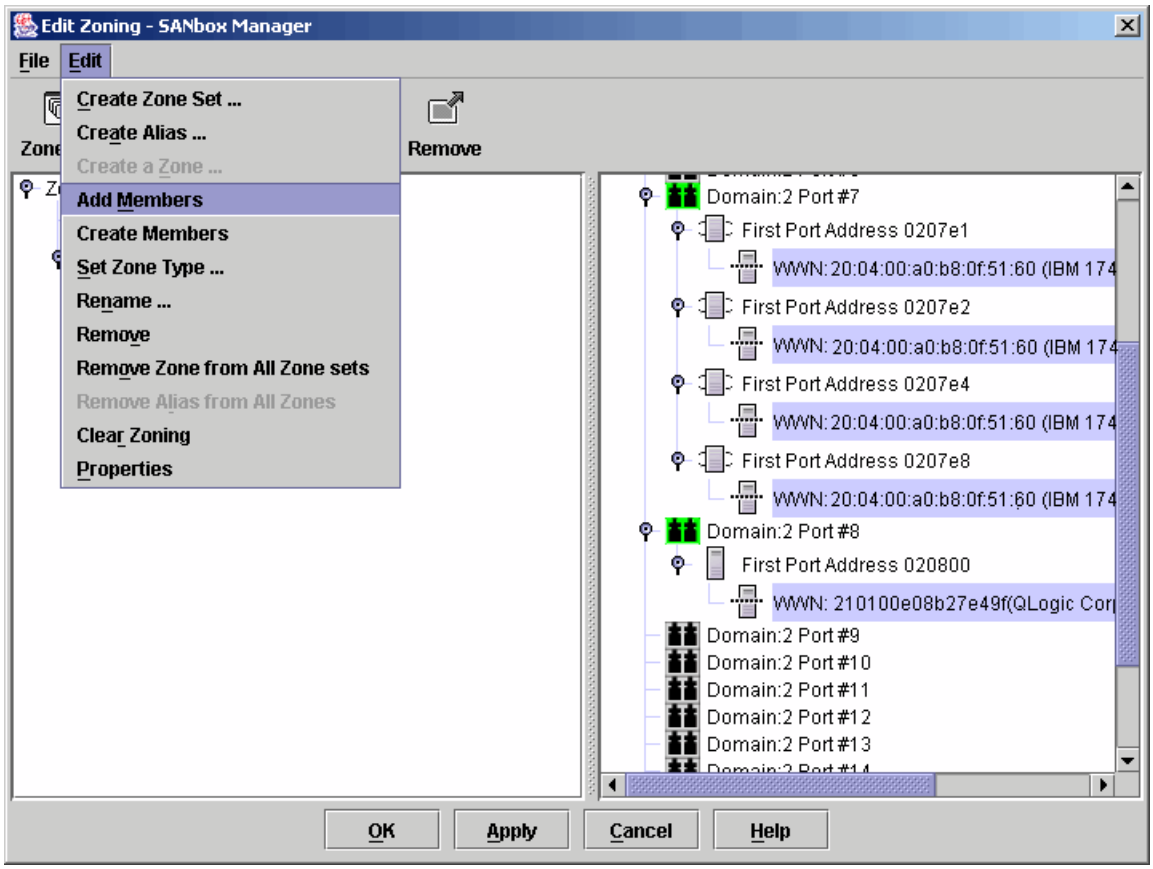
5. From the Edit Zoning dialog:
   a. Select the new zone set in the left frame.
   b. Select **Create a Zone** from the Edit menu.



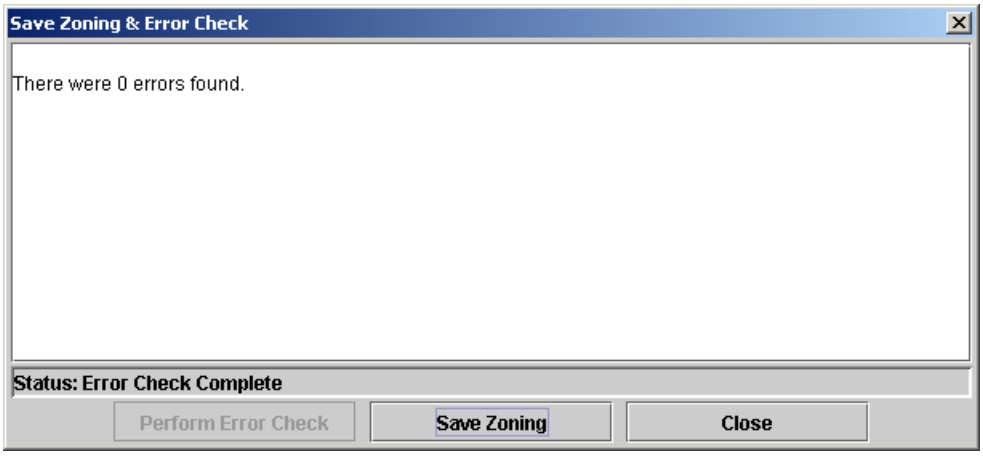

6. From the Create a zone dialog:
   a. Enter a **Zone Name**.
   b. Click **OK**.



7. From the Edit Zoning dialog:
   a. Expand the zone set and select the zone in the left frame.
   b. Highlight the devices to add in the right frame.
   c. Select **Add Members** from the Edit menu.
   d. Click **Apply**.

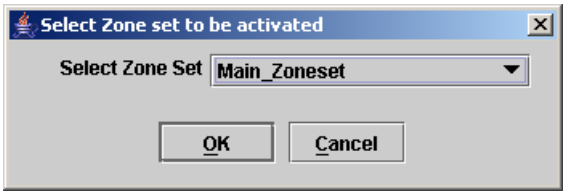


8. From the Save Zoning & Error Check dialog:
   a. Click **Perform Error Check** and verify that no errors are found.
   b. Click **Save Zoning**.

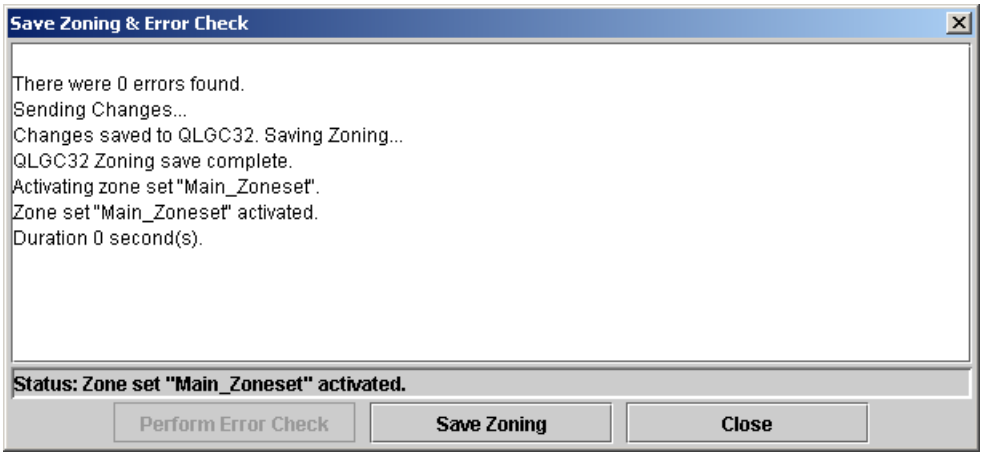



9. If you would like to activate your new zone set now, click **Yes** and continue to step 10. Otherwise, click **No** and skip to step 13.

10. Select the zone set you would like to activate and click **OK**:



11. When the zone set has been activated, click **Save Zoning**:



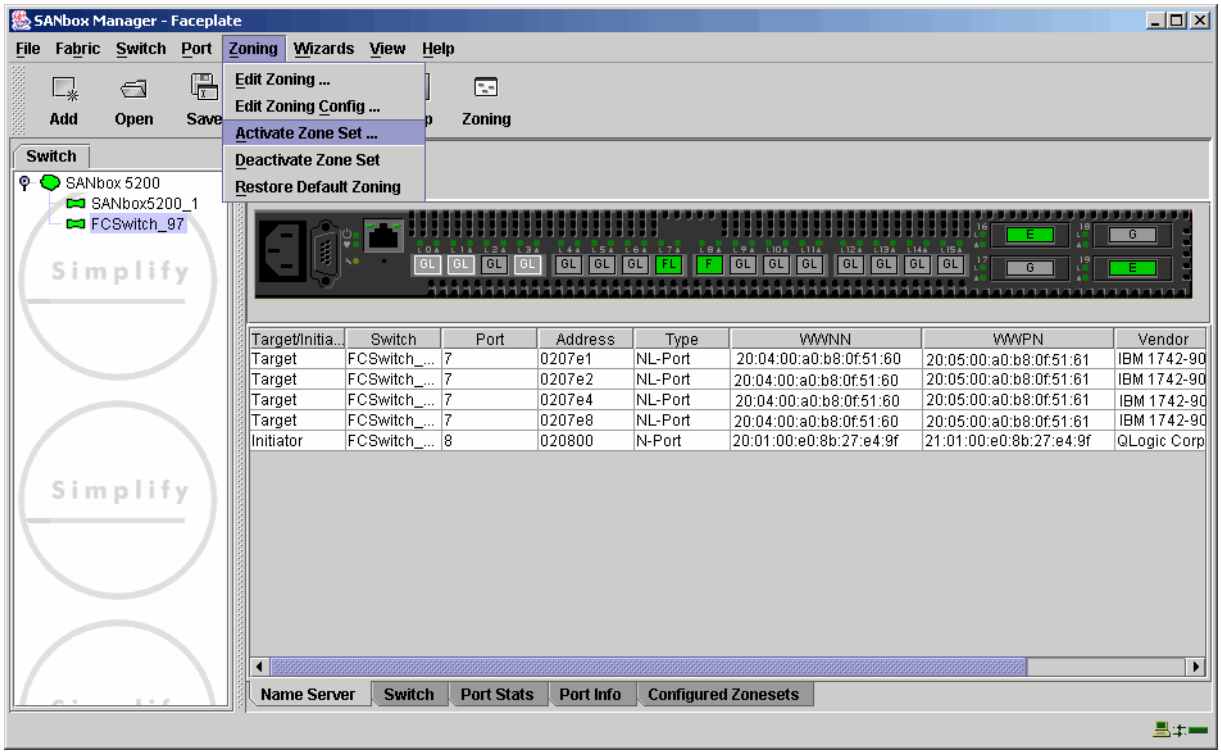

12. Click **Close** to exit the dialog.

## Activating the Zone Set Manually

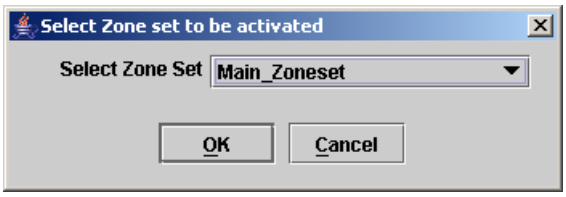
To manually activate the zone set, follow these steps:

1. From the SANsurfer Switch Manager Faceplate window, select **Activate Zone Set** from the Zoning menu:

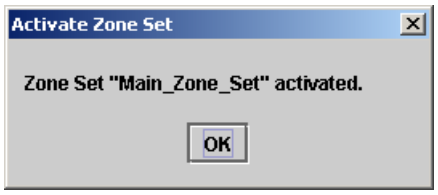
   *NOTE:* The following steps describe how to configure zoning for both the SANbox 5000 Series and SANbox Express 1400 switches. The steps are illustrated using the SANbox 5000 Series.


SANbox Manager - Faceplate
File Fabric Switch Port Zoning Wizards View Help
Edit Zoning ...
Edit Zoning Config ...
Activate Zone Set ...
Deactivate Zone Set
Restore Default Zoning
Add Open Save Zoning
Switch
SANbox 5200
SANbox5200_1
FCSwitch_97
Simplify
Target/Initia.. Switch Port Address Type WWNN WWPN Vendor
Target FCSwitch_... 7 0207e1 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e2 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e4 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Target FCSwitch_... 7 0207e8 NL-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
Initiator FCSwitch_... 8 020800 N-Port 20:01:00:e0:8b:27:e4:9f 21:01:00:e0:8b:27:e4:9f QLogic Corp
Name Server Switch Port Stats Port Info Configured Zonesets

2. Select the zone set you would like to activate and click **OK**:



3. Click **OK** to the Activate Zone Set message:



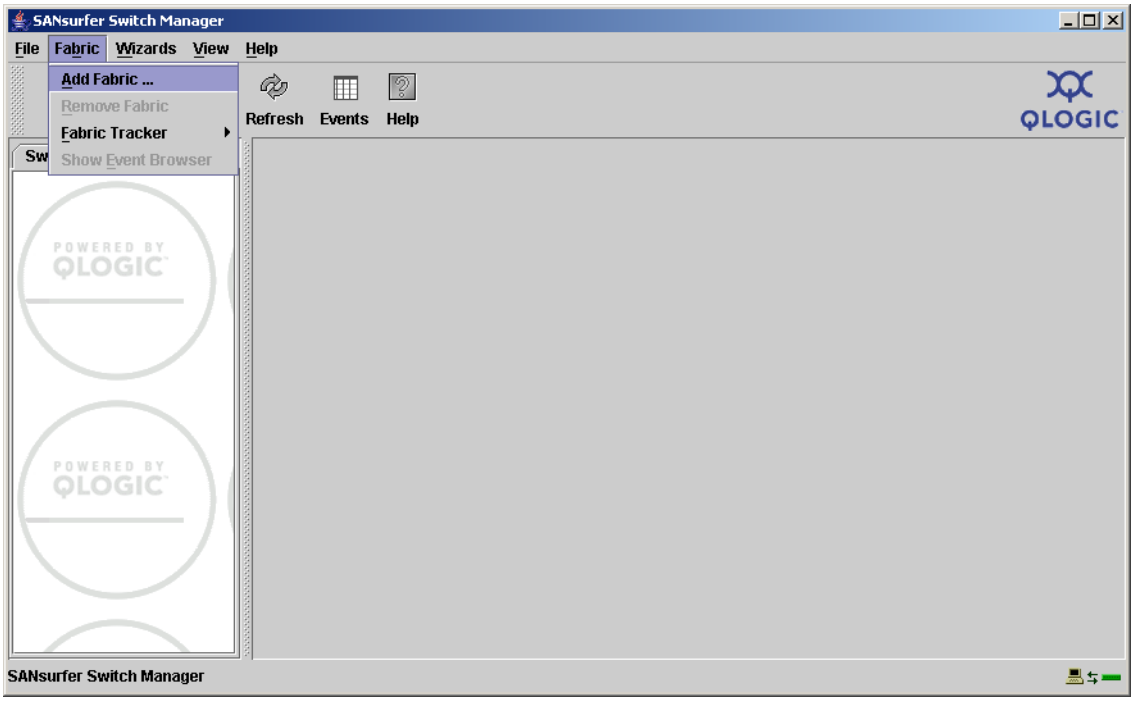
# SANbox2-64 Configuration

The following procedures explain how to configure the SANbox2-64 switch, verify the connections and test your configuration:

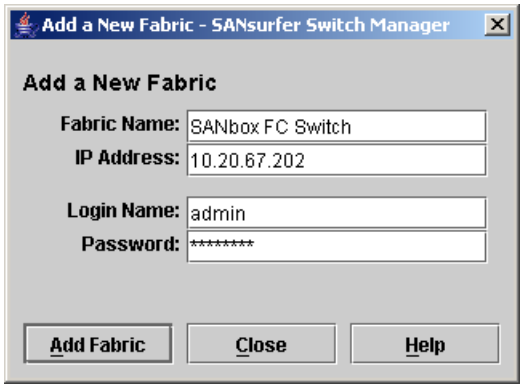
- Configuring Port Properties
- Connecting Cables
- Configuring Zones

## Configuring Port Properties

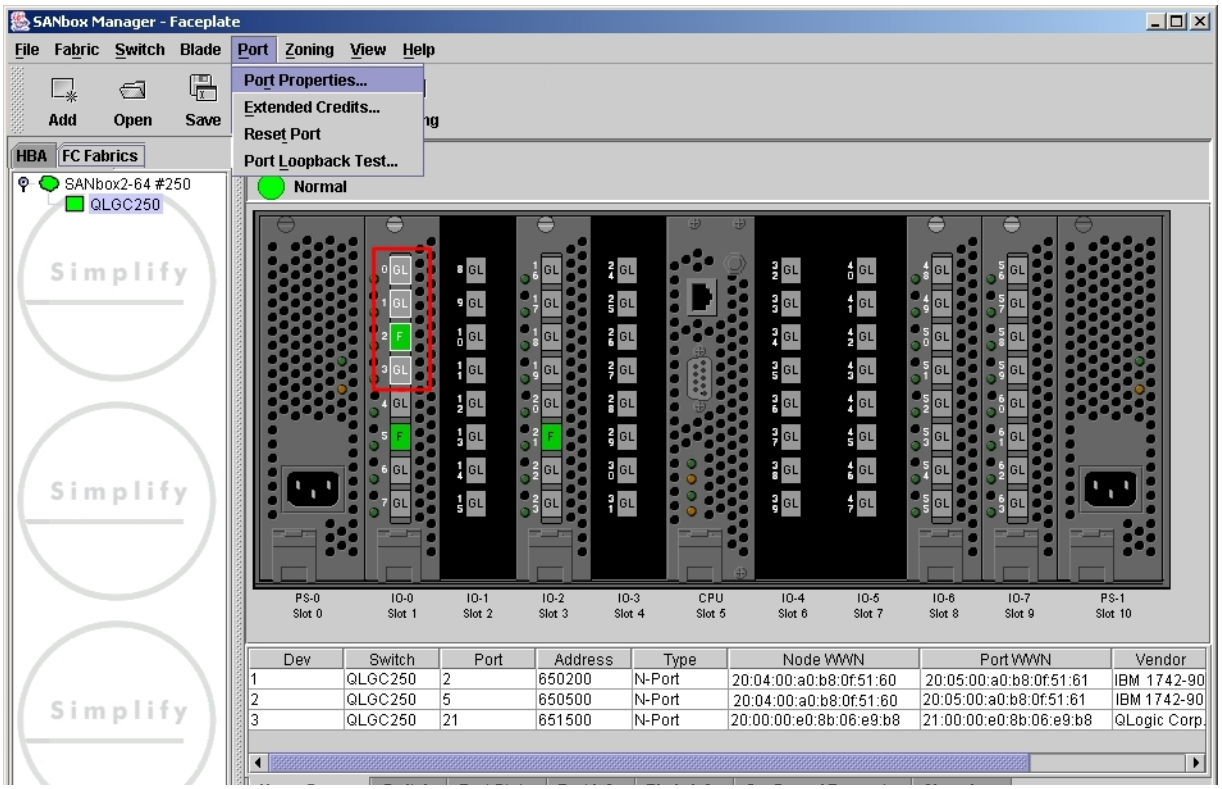
1. From the SANsurfer Switch Manager, select **Add Fabric** from the Fabric menu:



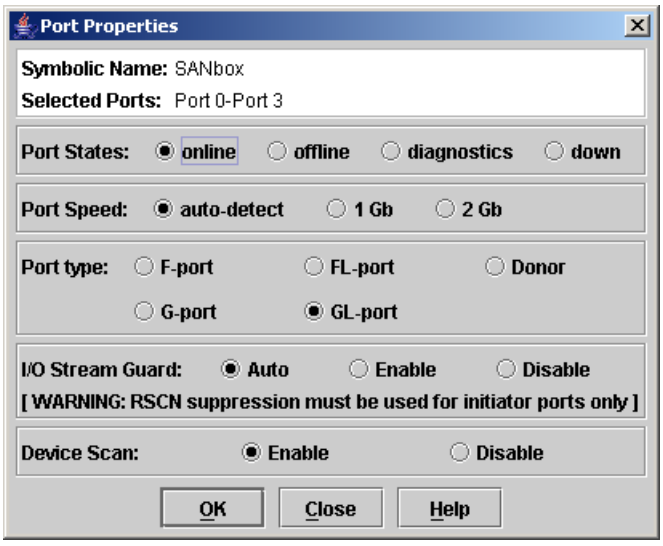
2. From the Add a New Fabric dialog:
   a. Enter a **Fabric Name**, **IP Address**, **Login Name**, and **Password**.
   b. Click **Add Fabric**.



3. From the SANsurfer Switch Manager – Faceplate window:
   a. Select the switch you want to configure.
   b. Select one or more ports from the faceplate.
   c. Select **Port** Properties from the Port menu.



4. From the Port Properties dialog:
   a. Select the desired port settings.
   b. Click **OK**.

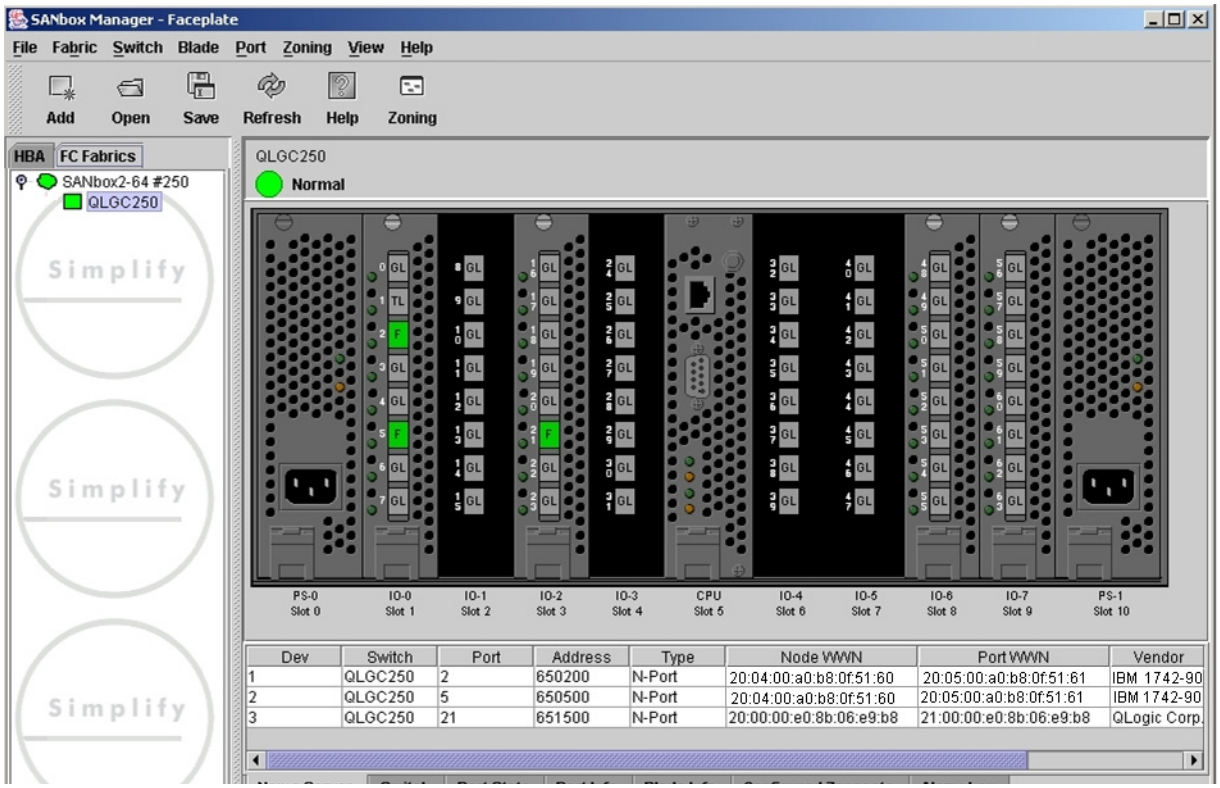

Port Properties
Symbolic Name: SANbox
Selected Ports: Port 0-Port 3
Port States: online offline diagnostics down
Port Speed: auto-detect 1 Gb 2 Gb
Port type: F-port FL-port Donor
G-port GL-port
I/O Stream Guard: Auto Enable Disable
[ WARNING: RSCN suppression must be used for initiator ports only ]
Device Scan: Enable Disable
OK
Close
Help

5. Click **OK** to close the Updating Port Properties message:

Updating Port Properties
Your changes have been successfully completed on the switch.
Wait while newly updated information is read in from the switch.
Status: Complete. Click 'OK' to continue.
OK

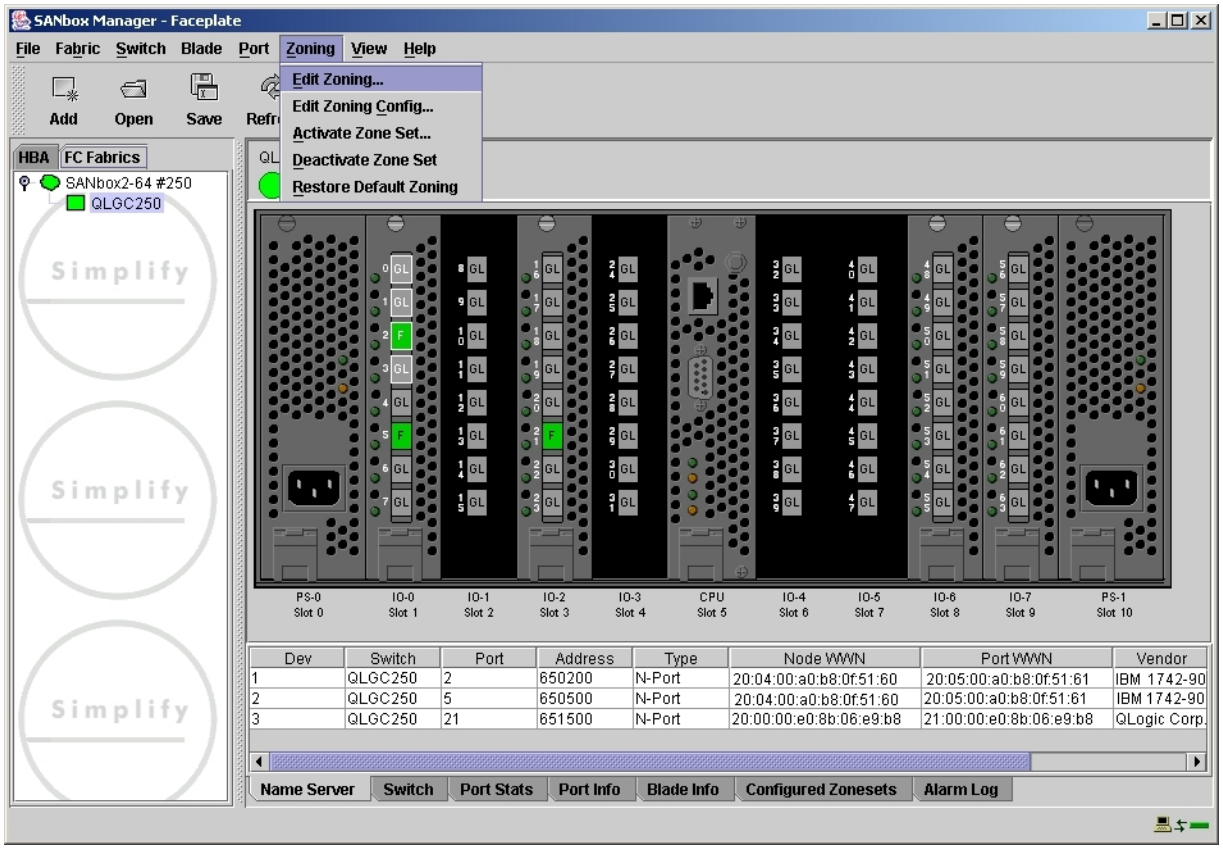
## Connecting Cables

1. Connect the devices to the SANbox2-64 switch ports you configured.
2. Verify that the green Login LED is illuminated for each device.
3. Launch SANsurfer Switch Manager and connect to the SANbox2-64.
4. From the SANsurfer Switch Manager – Faceplate window, verify that all devices are listed.

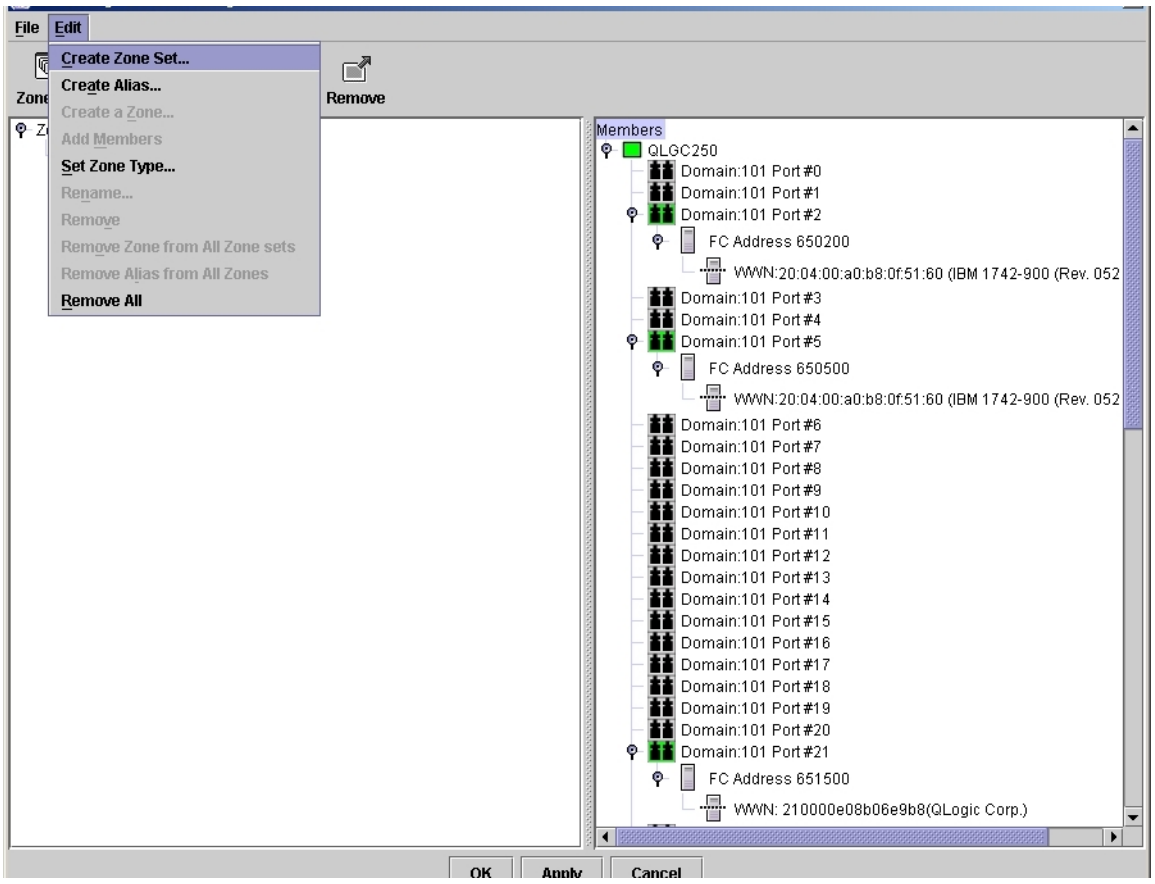


## Configuring Zones

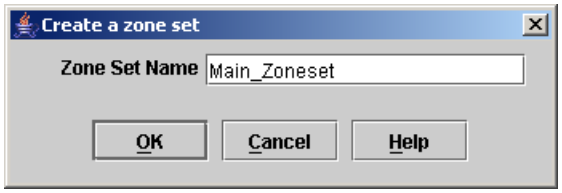
1. Launch the SANsurfer Switch Manager and connect to the SANbox2-64 switch.
2. From the SANsurfer Switch Manager – Faceplate window, select **Edit Zoning** from the Zoning menu:


SANbox Manager - Faceplate
File Fabric Switch Blade Port Zoning View Help
Edit Zoning...
Edit Zoning Config...
Activate Zone Set...
Deactivate Zone Set
Restore Default Zoning
Add Open Save
HBA FC Fabrics
SANbox2-64 #250
QLGC250
Simplify
PS-0 Slot 0
IO-0 Slot 1
IO-1 Slot 2
IO-2 Slot 3
IO-3 Slot 4
CPU Slot 5
IO-4 Slot 6
IO-5 Slot 7
IO-6 Slot 8
IO-7 Slot 9
PS-1 Slot 10
Dev Switch Port Address Type Node WWN Port WWN Vendor
1 QLGC250 2 650200 N-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
2 QLGC250 5 650500 N-Port 20:04:00:a0:b8:0f:51:60 20:05:00:a0:b8:0f:51:61 IBM 1742-90
3 QLGC250 21 651500 N-Port 20:00:00:e0:8b:06:e9:b8 21:00:00:e0:8b:06:e9:b8 QLogic Corp.
Name Server Switch Port Stats Port Info Blade Info Configured Zonesets Alarm Log

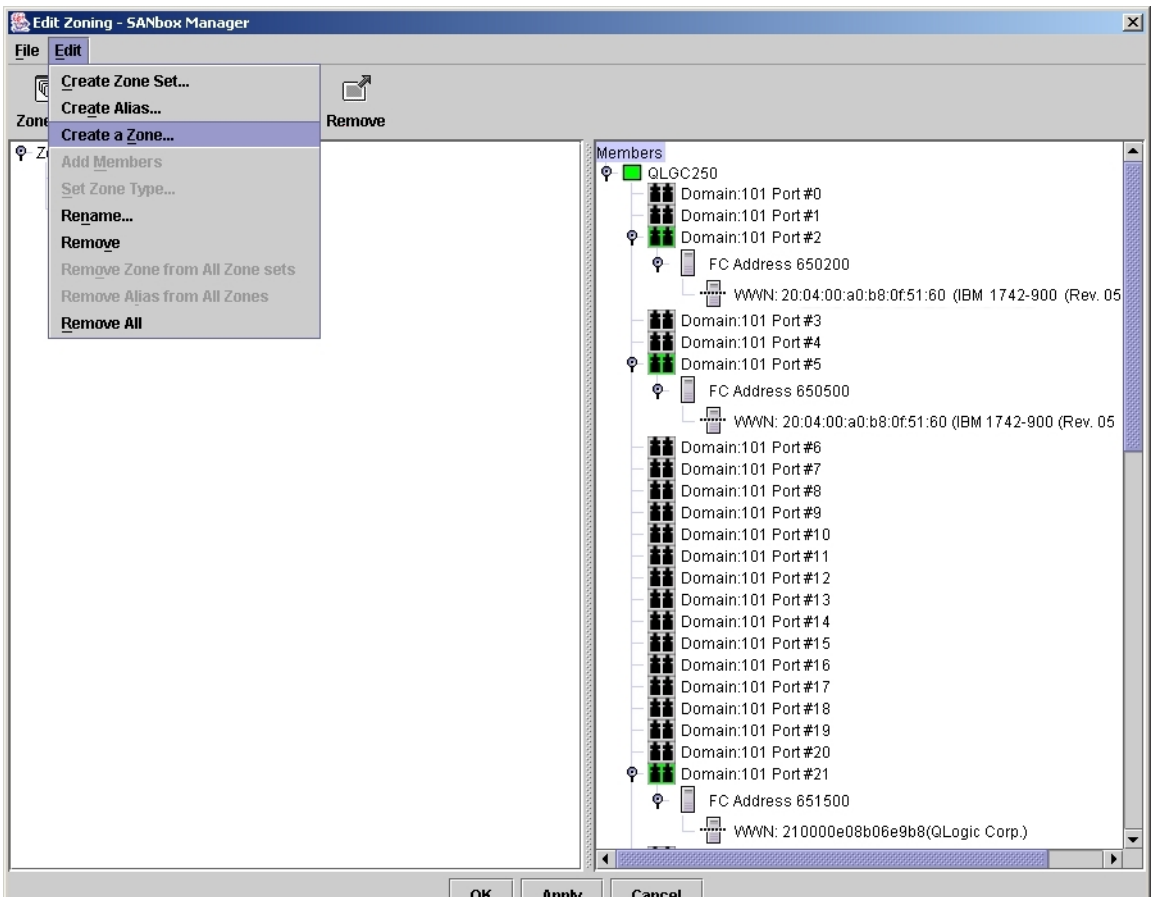
3. From the Edit Zoning dialog, select **Create Zone Set** from the Edit menu:



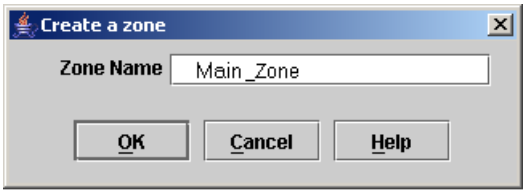

4. From the Create a zone set dialog:
   a. Enter a **Zone Set Name**.
   b. Click **OK**.



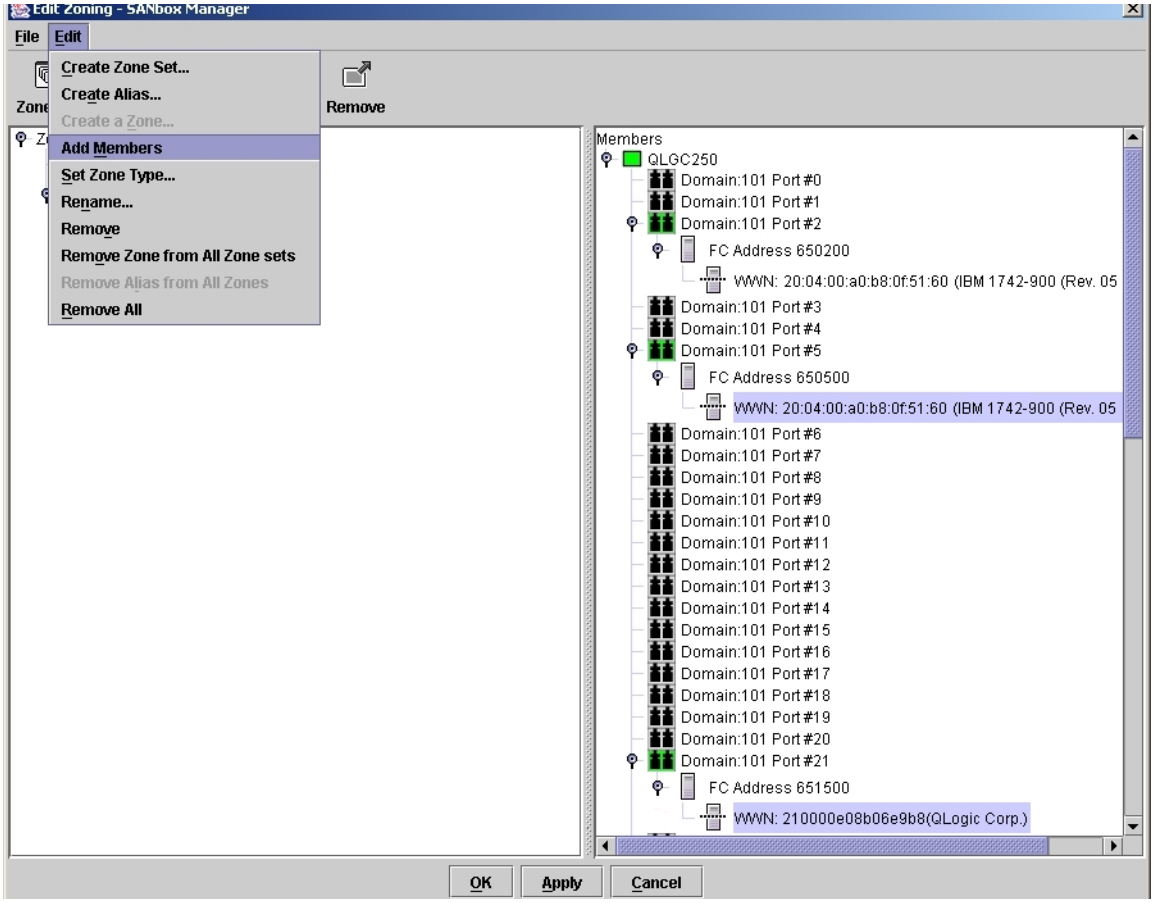
5. From the Edit Zoning dialog:
   a. Select the new zone set in the left frame.
   b. Select **Create a Zone** from the Edit menu.



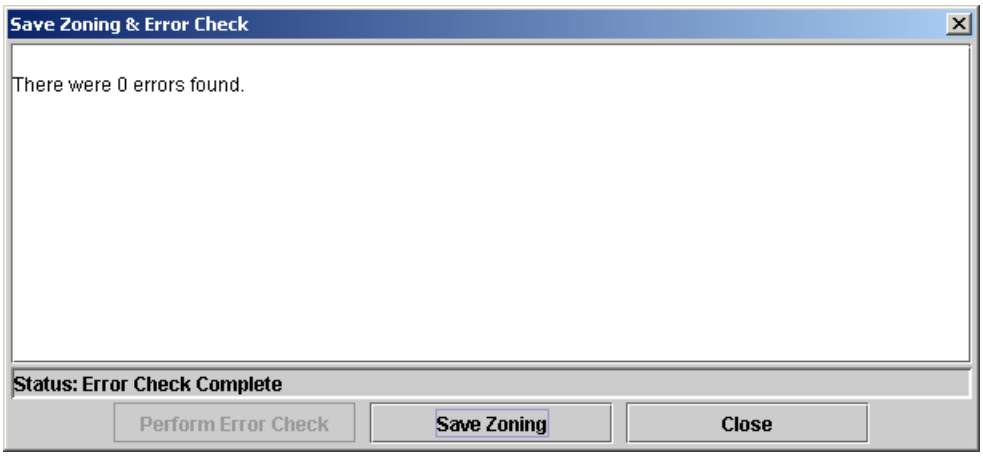

6. From the Create a zone dialog:
   a. Enter a **Zone Name**.
   b. Click **OK**.



7. From the Edit Zoning dialog:
   a. Expand the zone set and select the zone in the left frame.
   b. Highlight the devices to add in the right frame.
   c. Select **Add Members** from the Edit menu.
   d. Click **Apply**.

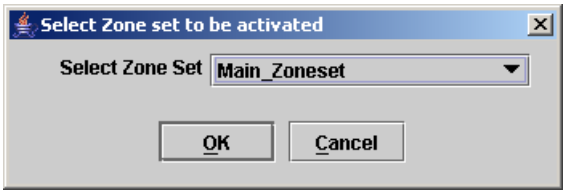


8. From the Save Zoning & Error Check dialog:
   a. Click **Perform Error Check** and verify that no errors are found.
   b. Click **Save Zoning**.

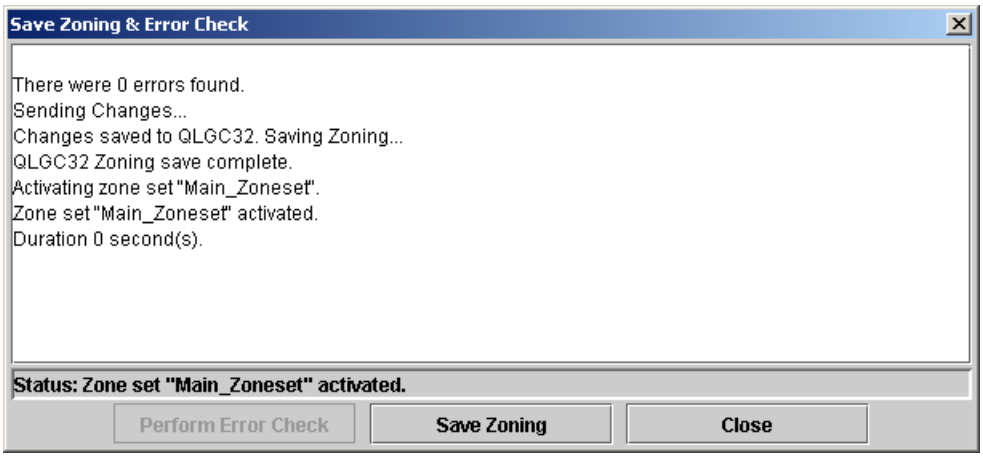



9. If you would like to activate your new zone set now, click **Yes** and continue to step 10. Otherwise, click **No** and skip to step 13.

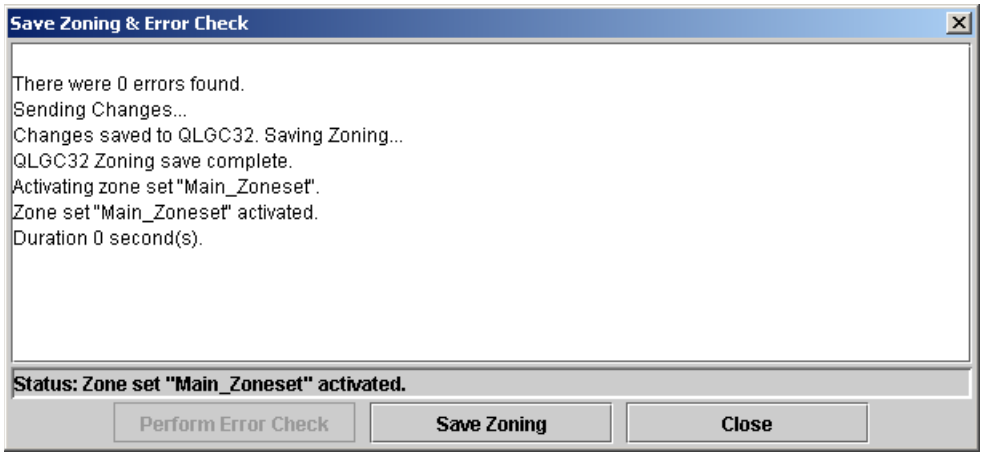
10. Select the zone set you would like to activate and click **OK**:



11. When the zone set has been activated, click **Close**:




12. Click **Close** to exit the Edit Zoning dialog. Skip the remaining steps if you have activated your zone.
13. When the zone set has been saved, click **Close**:

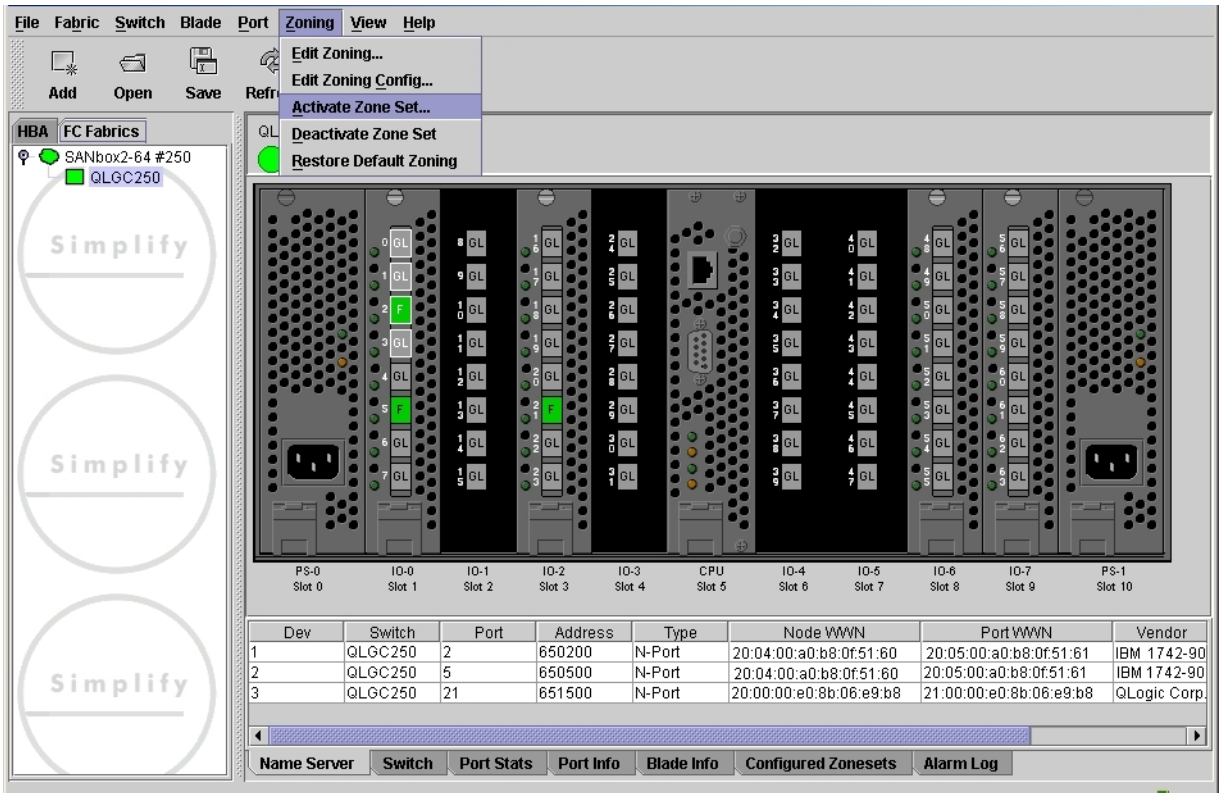



14. Click **Close** to exit from the Edit Zoning dialog.

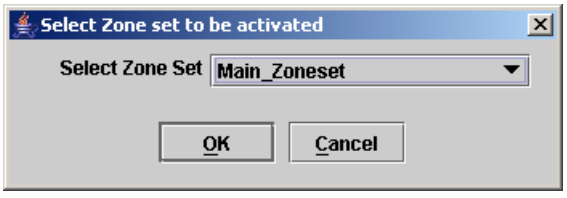
## Activating the Zone Set Manually

To manually activate the zone set, follow these steps:

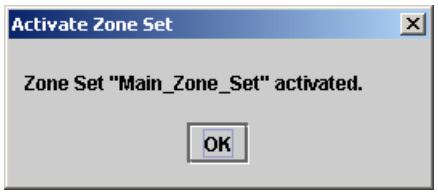
1. From the SANsurfer Switch Manager Faceplate window, select **Activate Zone Set** from the Zoning menu:




2. Select the zone set you would like to activate and click **OK**:



3. Click **OK** to the Activate Zone Set message:



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